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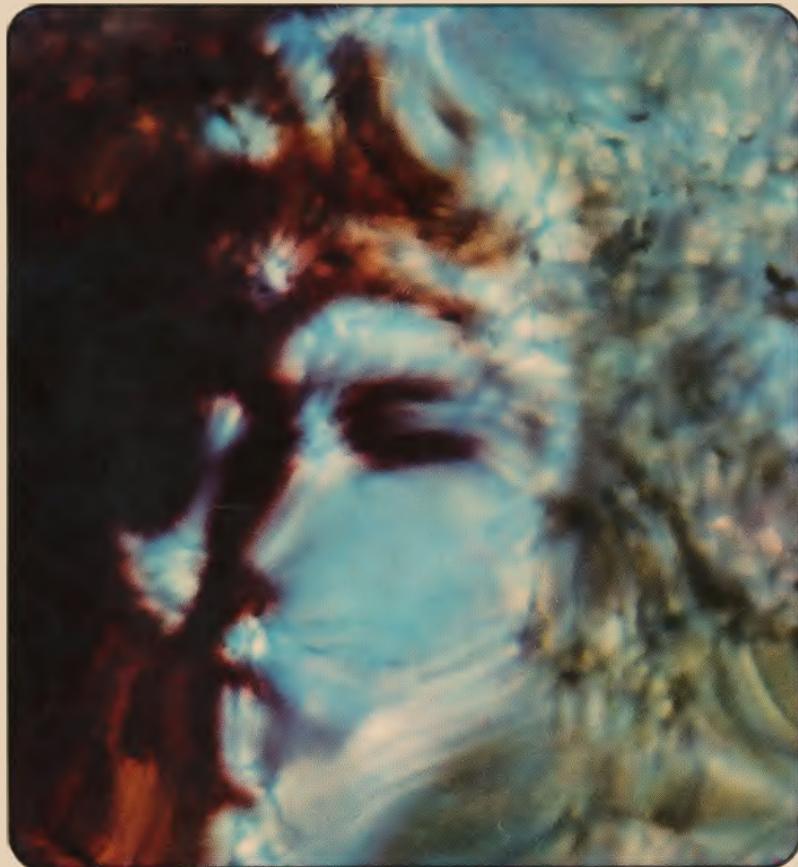
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LSD:

The Consciousness-Expanding Drug

Edited by DAVID SOLOMON

Introduction by TIMOTHY LEARY, Ph.D.



LSD:

LSD: THE CONSCIOUSNESS - EXPANDING DRUG is the only authoritative and comprehensive book that gives all the answers about this controversial subject.

Such people as Aldous Huxley, Alan Watts, Timothy Leary and William Burroughs discuss the validity of the psychedelic experience today.

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LSD

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For Aldous Huxley, *guru extraordinaire*,
whose words first beckoned me through
the doors of perception.

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I would like to acknowledge my deep gratitude to the scientists and writers who have graciously contributed essays to this anthology. I am especially indebted to Tim Leary, without whose editorial suggestions, insights and criticisms the present volume would hardly have been possible. I also wish to express my professional and personal appreciation to Tom Payne, whose guidance was invaluable; to Carol Sturm, whose editorial sensitivity and patience have been remarkable; to Bob Burdett, whose wisdom helped shape the ensuing pages; to Norman Morris, M.D., friend and physician; to Stan Smith, my first psychedelic shepherd; and to the women of my life: my wife Pat, my mother Ida, and my daughters Kim and Lin, for their devotion and encouragement.

EDITOR'S PREFACE

From the point of view of entrenched social establishments, it is perhaps legitimate to classify the psychedelics (literally, mind-manifesting or consciousness-expanding compounds) as dangerous subversive agents. By their action of flinging wide "the doors of perception," the insights they potentiate frequently enable one to see through the myriad pretensions and deceptions which make up the mythology of the Social Lie. Thus, to the extent that power structures rely upon the controlled popular acceptance of the Lie to shore up and stabilize their hegemonies, psychedelic substances do indeed represent a kind of political threat.

Fortunately, however, only the most static, repressive society need worry about psychedelic subversion. Consciousness-expanding chemicals, in reality, present no threat, but rather offer hope and encouragement to a democratically oriented social structure. (Such a structure I would define simply as one which tangibly strives to assume the role of benevolent accomplice in Everyman's effort to realize his human potential.)

In all fairness, however, it should be noted that the United States is the only nation where the controversy over the uses and control of the psychedelics has reached national proportions. In the province of Saskatchewan, for contrasting example, where medical care has been socialized, consciousness-expanding materials have received the enthusiastic endorsement of public health authorities for the treatment of alcoholism. For the purposes of this preface, suffice it to assert that current personal and therapeutic applications of psychedelic agents are matters of fact, and as such are discussed at length in the ensuing chapters.

I would like to address those who feel that the use of consciousness-expanding compounds for other than medical purposes represent a self-deluding flight from reality. My own excursions under the expansive effects of such mind-openers as LSD-25, mescaline and psilocybin (all essentially the same in their effects) were not chartered for therapeutic purposes. They were largely the result of a deep curiosity engendered by

reading such books as *The Doors of Perception* and *Heaven and Hell*, by Aldous Huxley, and *Drugs and the Mind*, by Dr. Robert S. de Ropp.

My first psychedelic experience was triggered by 400 milligrams of mescaline sulfate. It did indeed induce a flight, but instead of fleeing *from* reality, I flew more deeply *into* it. I had never before seen, touched, tasted, heard, smelled and *felt* so profound a personal unity and involvement with the concrete material world. My psychedelically accelerated mind did not merely grasp the symbolic poetic import, the utter simplicity and truth of William Blake's ecstatic vision: for the first time in my life I literally *saw* "the world in a grain of sand." My exponentially heightened awareness saw *through* the static, one-dimensional, ego-constricted, false front which is the consciousness-*contracted* reality of the everyday world. This was no evasive flight *from*, but a deep probe *into* reality.

As the editor of a collection of essays on the consciousness-expanding substances, I naturally hope that my efforts will generate more light than heat in the controversy over their uses and control. But reading, though stimulating and provocative, is of course no substitute for direct experience. Because of my own experiences with these mind-and-senses openers—and a goodly number of leading psychedelic investigators, both lay and professional, would concur—I am convinced that taking them in a planned and supervised, but permissive and relaxed setting is a minimal prerequisite, whether one is a doctor or a ditch digger, for a reasonable and critical understanding of their properties and potentials.

Moreover, I believe that the astonishing human brain is man's most inalienable possession, his intellectual birthright. No person or institution has the moral right to muffle or inhibit its development. No social authority can successfully arrogate unto itself the right to dictate and fix the levels of consciousness to which men may aspire, whether those states are induced pharmacologically or otherwise. *Die gedanken sind frei.*

DAVID SOLOMON

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INTRODUCTION

TIMOTHY LEARY, PH.D.

You hold in your hand a book shot through with paradox and controversy.

The subject matter is consciousness—the expansion of consciousness by means of foods and drugs.

Neither the foods and drugs nor the controversy are new. Visionary plants (such as the peyote cactus, the divine mushroom of Mexico, the soma of ancient Vedic pre-Hindu philosophers, divinatory vines and roots) have been used for thousands of years by medicine men, soothsayers, priest-philosophers, mystic brotherhoods. Today our technology provides us with chemical synthetics of the active ingredients of these ancient and venerable concoctions: lysergic acid diethylamide (LSD-25), mescaline, psilocybin and a host of lesser-known consciousness-expanding substances.

These foods and drugs have always been shrouded in mystery, misunderstanding and controversy because they produce that most sought-after and yet most dread experience known to man. They produce ecstasy. *Ex-stasis*, literally, out of, or released from a fixed or unmoving condition. They propel awareness out beyond normal modes of consciousness. They are properly called psychedelics—i.e., mind-opening substances.

The ecstatic, expansion process is neither new nor limited to the psychedelics. Many philosophers—Heard, Teilhard de Chardin and Heidegger, among others—have pointed out that human evolution seems to be characterized by alterations in consciousness.

Some theorists like to suppose a steady growth in consciousness; others, especially the Eastern philosophers, point to alter-

nating cycles of expansion and contraction of consciousness and warn that man may be in danger of contracting awareness down to the robot-narrow precision of certain overorganized species of life which we see around us. One of the many paradoxes about consciousness is that increased motor or social efficiency does not necessarily mean expanded awareness. The anthill and the computer remind us of this sober fact.

The explosion of scientific knowledge which began in modern times in the Renaissance has reached atomically accelerated proportions in our own day. We have learned that the structure of the entire physical universe is emergent and expanding. Along with the existential dangers of the destruction of consciousness by a nuclear holocaust, our era seems to offer the hope of an unparalleled expansion of man's untapped mental capacities. We are witnessing an exponential increase in time-space perspectives, esthetic and deliberate shatterings of classical symmetries. I believe the general topic of the psychedelic drugs and the specific interpretations of their effects, as presented in this book, should be viewed in the general context of this emergent scientific philosophy of expansion.

First we note that the scientific instrumentation developed in the last few decades has confronted man with visions, vistas and processes which have thoroughly dissipated his philosophic and social securities and, in addition, and most painfully, his views of himself and his nature.

The consistent message inherent in the data from every branch of science these days propels our imagination out beyond man's limited and transient position in the natural order.

Astronomers speak of billions of light years. Physicists speak of critical nuclear-process structures which last only microseconds. Biochemists and microgeneticists remind us that the genetic material—those strands of blueprinting intelligence—are so compact that the essence and seed of every human being on earth today could be contained in a cubical box one-eighth of an inch on a side.¹

The speeds, complexities, spatial dimensions, durations of these basic energy transformations demand a revision of our illusions about man's pre-eminence and dominance. The Renaissance-Reformation mythos would have us believe that man is the chosen vehicle, lord of all species. It may be closer to the data to see man as an animal who is only dimly aware of

the powers, energies, plannings and wisdom that surround him and radiate through him.

As if the findings of physics, astronomy and biochemistry were not awesome enough, next come data from two fields more directly connected with man's psychological core: neurology and psychopharmacology.

Neurology sketches out the existence of undreamed of structural and phenomenological galaxies within. And pharmacology provides new means for altering consciousness, for propelling us into new dimensions of awareness.

We have moved into a challenging, upsetting stage of the science drama. The awesome speeds and spaces of the energy sciences are humbling to our self-image, but at least they are attributes of forces external to our cognitions. We can use our rational faculties to change our instruments, change our language, invent new mathematics and new symbols to deal with processes beyond our neurological scope. But then comes the neurological implosion. Rational consciousness itself is seen as a fragile, tissue-thin artifact easily blown away by the slightest alteration of our biochemistry, by the simplest forms of external stimulation—for example, a few microvolts strategically introduced into specific areas of the brain, or the removal of accustomed stimulation.

We discover that our brain works with a velocity and scope which far surpasses our mental operations. The potential of cerebral association is of the order of thirteen billion to the twenty-five-thousandth power per second. But we think; we experience rationally at a maximum rate of three concepts—ten phonemes—a second. Our present mental machinery cannot possibly handle the cerebral potential. Our rational instrumentation is to our cerebral capacities as Eratosthenes's shadow pole is to the radiation from the sun. Most distressing is this fact: the instrumental inadequacy is not external but internal. The whirling, speed-of-light, trackless processes are properties of our brain, our organ of consciousness itself.

The paradox may be stated as follows: *it becomes necessary for us to go out of our minds in order to use our heads.*

It is much easier to give up our shadow poles and our hand telescopes than to go beyond what we generally consider our rational minds in order to experience, describe and measure new levels of consciousness.

This book is an early exploratory probe into the area of

accelerated and expanded consciousness opened up by psychedelic drugs. Each chapter takes up in turn a different interpretation and a different social rationalization of the process of ecstasy. Most of the contributors to this volume have experienced the psychedelic effect themselves and have dedicated considerable thought and time to the empirical study of their effects. Each author uses his own model, his own concepts to explain what happens when we push out beyond the unexpanded boundaries of our minds, beyond words, space-time categories, beyond social identifications, beyond models and concepts.

If the authors at times seem uncertain, if they seem to grope for words, if they seem too ready to spin out unproven hypotheses, if they seem to be going off in different directions, this is not a sign of disorganization but rather of the preliminary, rapidly changing speculation which inevitably characterizes a new breakthrough in the realm of ideas.

And the fact that research in this area provokes fierce controversy does not diminish but indeed strengthens the suggestion that we may be at another one of those wrenching transition points in intellectual history when the accepted ontological and mythological fundaments of society and of man's view of himself come into uneasy collision with new concepts.

The Stable World That Used to Be

To understand the meaning of any cultural development, it is useful to locate it in relationship to the dominant themes or mythos of its era. It is possible and sometimes useful to see all institutions—scientific, political, religious, economic—as differing expressions of the basic mythos of the epoch. This viewpoint perceives that each discipline simply rewords, reorchestrates certain underlying themes of the age. A profession or discipline which fails to fit into the mythic harmonic tends to be heard as a disruptive dissonance.

Thomas S. Kuhn has recently published a thought-provoking book which describes how scientific activities are determined by what he calls the paradigm of any period.² The paradigm is a distinctive world view which defines the sorts of problems and methods used in any era. Conventional science cannot go

beyond the limits set by the paradigm without running the risk of being seen as eccentric or even "unscientific."

During the last fifty years our basic view of the world seems to have been undergoing another one of these revolutions, a gigantic struggle of ideologies of which the current controversy over psychedelic drugs is but a minor skirmish. The older, classic world view (which is now being outgrown) concerns itself with equilibria among forces which are visible, external, predictable, measurable, manageable by man, within the realm of macroscopic consciousness. The religious expression of this mythos is Protestantism, with its emphasis on behavior, achievement, work, balancing and rationality. The current political forms (socialism, democracy, communism, parliamentarianism) are again anthropocentric, oriented toward man, either the individual man or the man-state, and all emphasize a balance among a limited set of external factors, resources, territories. Again the macroscopic, visible man-age-able aspects of behavior are stressed.

It is interesting to note how the scientific ideology of the last three centuries is seen to be symmetrical with the other institutions just listed. Classic physical science was almost exclusively a Protestant affair; the emphasis was on the orderly, clockwork equilibrium of external, material, visible macroscopic forces: God the master engineer, God the cosmic cost accountant balancing the natural books. Note for example how the mantra, the sacred motto of classic physics, is expressed in terms of conservation. Empirical facts stand as measured but the metaphorical interpretations we impose on the measures simply betray our basic (and usually unconscious) mythic commitments. Energy transformations measured by physicists could just as well be verbalized in other terms. Instead of talking about the Laws of Conservation we could just as well speak of the Orderly Sequence of Transformation—a metaphor which probably would be more productive of original thinking in the physical sciences. The conservation principle is, I submit, an implicit commitment to the mythos of the times. God runs the universe the way a good Christian runs his business and the way Andrew Mellon ran the country.

The *psychological* expressions of the anthropocentric mythos again fit the dimensions of the myth. Behaviorism (again a scientific movement invented and manned by men of the Protestant faith) recognizes only visible actions. Experimental

psychology (in direct defiance of Fechner, the so-called Father of psychophysics) defines consciousness in terms of physical changes—much to the distress of Fechner himself, who was completely committed to a spiritual, expansive conception of consciousness, a hundred years or more ahead of his time. Freudian psychology has become the platform for a psychology of adjustment. The human personality is pictured as a miniature universe ruled by conservation principles—ego, id, superego—pushing toward equilibrium. There was much more to Freud than this; but the post-Freudian history of psychoanalysis clearly reflects the protestantization of the theory. The Hassidic, expansive and mystical aspects of Freud's thinking have not been able to survive the inevitable pressure of the contemporary mythos.

The Emergent-Root Myth

Evidence from every branch of science—physical, biological and social—testifies to the humiliating inadequacy of the anthropocentric pattern of our time. The dimensions of the emerging vision are explosively expansive and deal with energies and structures which though fantastically potent are microscopic and, indeed, invisible. The good old macroscopic world is seen to be one level of conception, and a rather clumsy, robotlike conception at that. The orientation becomes internal, i.e., nuclear.

I have previously referred to the space-time parameters of astronomy, microphysics, and genetics, and noted the seemingly endless sequence of exponential transformations of speeds and complexities.

The sacred mantra of these new sciences seems to be best expressed in the Einsteinian conversion equation: $E = MC^2$. Here is a truly ecstatic logos—a shattering, vision-challenging motto. Structure becomes process. Matter becomes a transient state of energy. Stasis becomes ex-stasis.

It would be inappropriate and probably unnecessary to spell out at this time the obvious and varied ways in which the same exponential mythos begins to appear in other institutions. Overproduction, overkilling, overpopulation, automation are a few of the new terms which remind us that man's body and man's rational mind are becoming outmoded by social and technical explosions. The older view of man (economic, politi-

cal, religious, artistic, psychological) defined in terms of externals and behaviorals is reaching an agonizing endpoint.

Psychology, that discipline which treats of man's nature, man's view of himself, is always the last to adapt to a new world view. As my ex-colleague, Harvard's Jerome Bruner, points out:

. . . the view one takes of man affects profoundly one's standard of what is humanly possible. And it is by the measure of such a standard that we establish our laws, set our aspirations for learning, and judge the fitness of men's acts. It is no surprise, then, that those who govern must perforce be jealous guardians of man's ideas about man, for the structure of government rests upon an uneasy consensus about human nature and human wants. The idea of man is of the order of *res publica*, and, by virtue of its public status, it is an idea that is not subject to change without public debate. The behavioral scientist, as some insist on calling him, may propose, but it is the society at large that disposes. Nor is it simply a matter of public concern. For man as individual has a deep and emotional investment in his image of himself. If we have learned anything in the last half-century of psychology, it is that man has powerful and exquisite capacities for defending himself against violations of his cherished self-image. This is not to say that Western man has not persistently asked: "What is man that thou art mindful of him?" It is only that the question, when pressed, brings us to the edge of anxiety where inquiry is no longer free.³

While not addressed specifically to the issue of psychedelic drugs, this frank statement by a prominent member of the psychological orthodoxy speaks directly to the psychedelic paradox. From the standpoint of the established values of the older world, the psychedelic process is dangerous and insane—a deliberate psychotization, a suicidal undoing of the stability, conformity and equilibrium which man should be striving for. With its emphasis on consciousness, on internal, invisible, indescribable phenomena, with its multiplication of realities, the psychedelic experience is dreadfully incomprehensible to one committed to a rational, Protestant, achievement-oriented, behaviorist, equilibrated, conformist philosophy. But it makes perfect sense to one who is ready to experience the world in terms of the Einsteinian exponential view of the universe. The psychedelic experience is exquisitely effective preparation for the inundation of data and the problems to come.

In the last few pages I have been sketching in the outline of

the over-all cultural mythos, the world view of which the new neurology and psychedelic pharmacology seem to be parts. The reader's reaction to this book and his position vis-a-vis the psychedelic drugs will depend, to a great extent, on his orientation to this general struggle of ideologies which characterize our times. Little has been said, so far, about the ecstatic process initiated by the consciousness-expanding drugs. The reader's understanding of the diverse essays presented in this book will be facilitated by a brief examination of three important aspects of the psychedelic process: (1) the neurological situation; (2) the pharmacological situation; (3) the psychological factors.

The Neurological Situation

The facts of the neurological capacities of the human being are simply astronomical. We possess, each of us, around 10 billion brain cells. This is several times the number of human beings in the world. Any one brain cell can be in relationship with as many as 25,000 others. The number of possible associations is of the order of 10 billion to the twenty-five-thousandth power, a quantity larger than the number of atoms in the universe.⁴ This electrical-chemical network, inconceivable in its complexity, is the anatomical structure of consciousness.

Into the brain, at each second, there pours something like 100 billion sensations. The brain itself fires off around 5,000 million signals a second.⁵

In contrast to the incredible potentialities of the brain is the obvious fact that we are aware of only the millionth fraction of our own cortical signaling. Huge areas of the brain (neurologists call them "silent areas") are blocked off from consciousness. Neurologists in their reflective moments pose disturbing questions: ". . . has man, perhaps, more brain than he knows what to do with? Is his huge 'neo-pallium' merely a wasted asset, like a powerful engine installed in a decrepit automobile which can never utilize more than a fraction of the available horsepower?"⁶

How can we explain this extraordinary discrepancy between the potentials of the cortical computer and the poverty of the programs we impose upon it? There is little known about the function of the brain and about the learning processes by means of which the brain's enormous potential is limited and

contracted. The term which seems most adequate to describe this process is *imprinting*.

What is imprinting? According to psychologist Clifford Morgan it is "very rapid learning that takes place in some animals . . . at a certain early state of development." Morgan goes on to describe this fascinating process.

One investigator hatched out some goose eggs in an incubator and happened to be present when the eggs hatched. For this reason he was the first large moving object that the goslings saw. Much to his surprise, the goslings began following him about and acted as though he, rather than the mother goose, were their parent. The young goslings, in fact, would have nothing to do with their mother and insisted on having his constant company. *This learning, which takes place very rapidly and without any specific reward, is called imprinting.*

We have not yet fully explored the phenomenon of imprinting. We already know, though, that it is fairly widespread among birds. We know too that it can take place only *during a short interval* (a few hours or a day or two) and *at a certain time* (usually shortly following birth) in the life of an animal. It also seems to be *irreversible*; once it has taken place, it is difficult to alter through subsequent learning. There may, however, be some true learning connected with it. Young goslings, for example, at first follow any person if a human being has been the first object with which they have contact after hatching. A few days later, however, they learn the individual characteristics of the person who ordinarily leads them to food and shelter, and then they will follow no one else. Thus imprinting may be a natural stage in the maturation of an animal.⁷

The exact biochemical, neurological mechanism which produces imprinting is not yet known but the process exists and poses some challenging problems for psychological theory. Here is a sudden irreversible type of learning which seems independent of the laws of motivation, reward, conditioning. It is a rapid structuring of the nervous system, a sudden, shutterlike fixing of neurological film. The picture once taken, the structure once established, then determines the scope and type of subsequent "lawful learning." Imprinting is a biochemical event which sets up the chess board upon which the slow step-by-step learning of conditioning takes place. A major, perhaps the most important, aspect of learning thus eludes psychology and is located in the mysteries of neurology. Imprinting is an embarrassing topic to the conventional psychologist.

Another awesome aspect of the imprinting process is its unpredictable and accidental quality. Because Conrad Lorentz happened to be present at the right moment, the goslings "imprinted" him as the protective, maternal object. In another experiment young birds were presented with a Ping-Pong ball at the critical moment and spent their remaining life pursuing and making love to the plastic globes. This experiment is both amusing and frightening. It reminds us that each of us sees the world through perceptual structures (biochemical-neurological) which were laid down accidentally in our earliest moments. It raises the uneasy suspicion that, in spite of our vaunted rationality and conditioned certainty, we may be simply chasing the particular Ping-Pong balls which, at those sensitive shutter moments, had been imprinted on our cortical film.

These two neurological findings, the astronomical amplitude of the brain and its susceptibility to sudden fixated contraction, have implications for our understanding of the effect of psychedelic drugs.

The Pharmacological Situation

Certain alkaloid molecules possess the power of dramatically suspending the familiar, learned structural aspects of the nervous system. Consciousness is suddenly released from its conditioned patterning and flung into a flashing loom of unlearned imagery. However heatedly scientists may disagree about the value and social meaning of the psychedelic drugs, there is one point upon which they concur: the drugs do propel awareness into an eerie, novel landscape in which everything seems possible and nothing remains fixed.

As in the case of the imprinting process, research on the psychedelic drugs has not yet discovered a neurological explanation of how this comes about. Just as the term *imprinting* defines an as yet unexplained, sudden biochemical fixing of a structure upon the nervous system, so might we consider the effect of psychedelic drugs as a temporary suspension of imprinting—an as yet unexplained sequence of sudden biochemical "unfixing" of perceptual constancies.

This metaphor is offered as assistance to the reader who will find himself intrigued and fascinated by the varied interpretations, literary and clinical, presented by the authors of

this book. How do we develop our strange, unyielding modes of perceiving ourselves and the world which we call normal? How are they so awesomely altered upon the ingestion of a psychedelic food or drug?

This hypothesis of the psychedelic effect as a suspension of imprinting may be more than just an aid to comprehension. Hypotheses do not present themselves for approval or rational agreement. They define experimental questions. The imprinting hypothesis, relating as it does two hitherto separate fields of research, may suggest new empirical tests. Psychedelic drug states may throw light upon basic neurological theories of learning. More relevant to this volume, the imprinting theory may provide a more coherent explanation of the psychedelic state.

Some suggestive evidence already exists: current neurological research indicates that serotonin is a key factor in the transmission of nerve impulses. It has been shown that there is a difference in serotonin metabolism between infants and adults and between "normal" and schizophrenic persons. It is also known that LSD effects serotonin metabolism.⁸ Marplan, a drug which "builds up the brain's stockpile of serotonin" and which has a tranquilizing effect on mental patients, blocks the action of LSD.⁹

Serotonin, in the light of this metaphor, might be seen as contributing to the fixing or imprinting process which is necessary for "normal" perception. The fluid, shifting, unfixed imagery of the involuntary and unpleasant psychotic state, the voluntary, ecstatic psychedelic state and the preimprinted period of infancy are associated with a change in the body's level of serotonin.

To carry the metaphor to its next logical position, psychedelic drugs may not only suspend old imprinted patterns, they may also provide the possibility of *re-imprinting*.

The concept of re-imprinting is, of course, a neurological restatement of the "death-rebirth" experience which is so often reported during psychedelic moments.^{10, 11, 12} Re-imprinting means that during the psychedelic session the subject's nervous system is in a state of disorganized flux closely analogous to that of infancy. The planned, voluntary release of fixed perceptual patterns and the temporary opening up of fluid, boundaryless awareness suggests the hope of controlled, self-controlled re-imprinting. And here we come to the psychological

implications of the psychedelic experience. The accelerated personality change, the rapid learning, the sudden life changes so regularly reported by psychedelic researchers.^{11, 12, 13, 14, 15, 16}

The Psychological Situation

One of the most confusing aspects of psychedelic phenomena is the wide variation of response. There is the common factor of going out of your mind, out beyond the imprinted, learned structure, but the specific content of what comes next is always different. Heaven or Hell. Buddha or Babbitt. It is this fantastic range of novel possibilities which has contributed to the controversy and confusion. This interpretative chaos is resolved by the set-setting hypothesis. One simply cannot make any sense of the psychedelic literature if one thinks of LSD, mescaline and psilocybin merely as drugs, as pharmacological agents which produce a generally predictable sequence of responses such as aspirin, morphine or insulin. The psychedelic substances have negligible somatic effects. Their site of action is the higher nervous system. They affect consciousness. Once the "normal" modes of awareness are suspended, the specific changes in consciousness which occur are due to set and setting.¹³

Set refers to that which the subject brings to the situation, his earlier imprinting, his learning, his temperament, his emotional, ethical and rational predilections and, perhaps most important, his immediate expectations about the drug experience.

Setting refers to the environment, social, physical, emotional, to the milieu of the session. The most important aspect of setting is the behavior, understanding and empathy of the person or persons who first administer the drug and who remain with the taker for the period that the drug is in effect.

Set and setting are psychological terms. The explanatory value of these concepts has been demonstrated in many studies^{14, 17} and, indeed, one can say that the psychedelic controversy itself, that phenomenon of serious, honest, dedicated scientists heatedly making conflicting reports about LSD and other psychedelic substances, is nothing more than a broad social confirmation of the set-setting hypothesis.

Another psychological interpretation of the psychedelic effect which fits the set-setting hypothesis is the extreme sug-

gestibility which characterizes the experience. The heightened vulnerability to internal or external stimuli—which leads some to paranoia and others to cosmic ecstasy—points to the critical importance of expectation and environmental pressure. Set and setting determine the direction in which suggestibility is pushed.

In the past few pages we have reviewed three areas which must be taken into account if one wishes to understand the psychedelic effect—the neurological, the pharmacological and the psychological. The concepts presented (imprinting, re-imprinting, and set-setting-suggestibility) are broad, noncommittal metaphors—flexible enough to allow for a wide range of specifications and essentially heuristic, that is, a valuable guide capable of and indeed provocative of direct empirical check.

The most useful aspects of these broad concepts is that they allow for a cross-disciplinary articulation. The psychological metaphor translates directly to the neurological-pharmacological. This is to say that set-setting can be said to define the conditions for the re-imprinting which can take place during the period of pharmacological heightened suggestibility.

A psychedelic session is a planned, temporary suspension of old imprinting, an opportunity for planned re-imprinting, the structure of which should be determined by carefully planned set and setting.

The Problem of Communication

Such terms as "imprinting," "set-setting-suggestibility," "going-out-of-your-mind," indeed, the term "psychedelic" itself, are static structural notions. They provide an outline within which we can think and talk about the psychedelic effect. But they do not attempt to communicate the speed, breadth and shuttling flow of the experience. Communication is blocked because words are inadequate to describe the shuttling web of a thirteen-billion-cell cerebral computer pharmacologically released from imprinted constancies.

Communication is also blocked because of the fears which are aroused by the very nature of the topic—"suspension of imprinting," "going out of your mind."

A case history anecdote may illustrate this point.

Not long ago I spent an afternoon with Dr. Richard Alpert and Dr. Ralph Metzner lecturing to the staff of one of the coun-

try's most respected scientific institutes. About thirty-five scientists were present, and after the formal lectures almost two hours of questions and discussion ensued. In closing the meeting the chairman, a well-known physicist who had taken LSD several times, made two rather pessimistic appraisals. He doubted whether any of the audience would retain more than a most fragmentary and distorted memory of the meeting and he questioned the possibility of verbal communication about the psychedelic experience. "Those who have taken a psychedelic drug realize it can't be talked about and those who haven't naively assume that it can be talked about with the current vocabulary."

After the meeting adjourned, we met in an office with four members of the institute who had previous experience with psychedelic drugs. Three of these men were strangers, but this did not prevent a most intimate evaluative discussion. Without any attempt at social niceties, these men immediately plunged into a frank, avuncular coaching process—ruthlessly critical and completely accepting.

It was as though Alpert, Metzner and I were rookie pitchers who had just been batted out of the box and were being instructed by four veterans of the same team. It was as though all seven of us were visitors from another planet meeting to figure out how to explain to earthlings, how to translate into English, the procedures and events of our totally different world.

It was interesting to note that each one of our coaches had a different strategy to suggest. One said we should make our psychedelic lectures completely personal. "Tell concretely what happened to you."

"Nonsense," said another. "You should be strictly objective and scientific. Rely only on published data."

A third advisor disagreed: "Make it practical. Tell the audience about the pragmatic details—dosage, how long it lasts, what people say and do during sessions."

The fourth advisor was the most psychological. "In discussing psychedelic drugs you must recognize the fears of the listener. Anticipate his objections. Be humble. Stress the dangers and problems. Don't put him on the defensive."

One of the advantages of the book you are now reading is that the editor, David Solomon, has skillfully selected essays which follow all these discrepant counsels. But while sensitive editing may solve the problem of dialect and rational approach,

it does not resolve the emotional reactions which are usually generated by the topic of consciousness expansion.

Although our four fatherly advisors could not agree on strategy for communicating knowledge about psychedelics, they were unanimous in criticizing the central metaphor which I have employed here to prepare the reader for a better understanding of the psychedelic effect: "*You have to go out of your mind to use your head.*"

"This is guaranteed to scare people," we were told, "especially rational, intellectual people. You just can't go around telling persons that they are going to go out of their minds and expect a sympathetic response. Use a positive language. Use familiar jargon. Talk about creative reorganization or perceptual reintegration."

But this advice we cannot take. The message cannot be toned down. We are going to have to face the fact that psychedelic drugs do take us fast and far beyond our normal conceptual framework. But the term "*going out of your mind*" shouldn't really be that disturbing. We recall that most of the great religions have taken this goal, *ex-stasis*, the going beyond the rational, as their central program. The fact that we now possess the chemical means for guaranteeing this process should be a cause for rejoicing—for those who take their religion or their neurology seriously.

No, the point cannot be toned down. In preparing subjects for a psychedelic session or in preparing society for what is happening during this period of the psychedelic explosion, we cannot responsibly avoid confronting the paradox: you have to go out of your mind to use your head.

The Fear of the Potential

All of us, and I include here the most experienced psychedelic veterans, must recognize certain fears which are generated by the psychedelic process. The recognition of the type and source of terror is the first step in dealing with it constructively.

Five most common fears provoked by the notion of consciousness expansion can now be listed:

- 1) *Cognitive*: the terror of the loss of rational control; the fear of disorientation and confusion.

2) *Social*: the terror of doing something shameful, or ludicrous; the loss of social inhibitions.

3) *Psychological*: the terror of self-disco very; of finding out something about yourself that you do not want to face.

4) *Cultural*: the terror of discovering the painful truth about the institutions with which one is identified; of seeing through the tribal shams; of becoming disillusioned with one's social commitments and thus an irresponsible person.

5) *Ontological addiction*: the terror of finding a realm of experience, a new dimension of reality so pleasant that one will not want to return. This fear is probably based on the unconscious hunch, shared by perhaps all men and dramatically expressed by a leading theoretician and practitioner of consciousness-expansion techniques, the late Georges I. Gurjieff, that normal consciousness is a form of sleepwalking and that somewhere there exists a form of awakeness, of reality from which one would not want to return.

All these fears are frequently equated to fear of death. Each of the five elements of the ego structure are built up out of teaching, experience and habit to the point that each is taken as a part of identity. The respective fears are of a shattering, a fragmentation of this identity. And the fear of such shattering is the equivalent of, and indistinguishable from, the fear of death. But this construct of the identity is found to be an illusion. One who has the courage to undergo the shattering of the illusion will die, but will die in the mystical sense, ". . . so that he may live again." A Zen couplet says: "Be dead, thoroughly dead, and do as you will." It is the healing process which Tillich describes as "taking a walk through hell." To have courage to walk through this hell brings the transcendence that lies beyond.

Like other forms of anxiety, these five fears are related to deep yearnings and potentials in man. For each terror there is a corresponding liberation.

The cognitive terror is a negative interpretation of the desire to go out of your mind to gain your head. Transcendence of mind makes possible new realms of insight.

The social terror of "acting out" is a negative interpretation of the ancient axiom (Taoist, Zen, Buddhist) that you must go out of your mind to reach that creative quietude which is open to enriched experience.

The terror of seeing yourself is the negative aspect of the possibility of seeing beyond yourself.

The fear of cultural disillusionment is the negative aspect of the possibility of seeing into new institutional solutions.

The terror of ontological addiction is the static and negative interpretation of the goal of internal freedom, the ability to move voluntarily from one level of consciousness to another, just as the scientist focuses his vision from the microscopic to the telescopic.

This book, on the Consciousness Expanders, written by scientist-scholars, is another episode in the endless round of communication, the reading-writing game. There are the authors trying to explain and describe experiences which they recognize to be beyond the range of words and there are the readers, each one of whom brings to the book his own expectations and experimental background.

Let us plan the reading of this book as we would plan a psychedelic session itself. Like the taking of LSD, the reading experience depends upon set and setting. The setting is, of course, provided by the fifteen chapters which are about to present themselves to your nervous system. Committed to printers' type there is nothing more that can be done about the setting (which points to the static inefficiency of the written word). The rest is up to you, the reader. To get the most from this book (as in the psychedelic session) you should approach it with an open mind. Let it be said directly that unless you have had a psychedelic experience, great portions of this book will be beyond your present mental categories. If you plan to impose your own rational structure on this book, you will end up with, and within, the limits of your own categories. And that will be everyone's loss.

Like a psychedelic session, this book can, if you let it, startle, excite and even frighten you. But if you are prepared, if you are able to let your rational categories stretch and become permeable, you may sense some of the potentials—social, creative, psychological, cultural and ontological—which may be experienced by means of the consciousness-expansion process.

The study of psychedelic drugs has in the last ten years engendered an enormous emotional reaction from society. Each of the "consciousness expanders" who contribute to this book has risked two dangers, one personal and one social.

First of all, they have all gone out of their minds voluntarily and creatively for the furtherance of their work. Next, they have all risked social sanction to write about their experiences. Some have lost their jobs, many have risked their reputations, all of them have had to steer head on against the winds of orthodoxy at a time when it would have been easier to trim sails.

Theirs has been the fun of the adventure, the excitement of the discovery, the fascination of the paradox.

May it, reader, be yours as well.

Millbrook, N. Y.

May 1964

BIBLIOGRAPHY FOR INTRODUCTION

1. Beadle, George W. "The New Genetics: the Threads of Life." *Britannica Book of the Year*. Chicago, 1964.
2. Kuhn, Thomas S. *The Structure of Scientific Revolution*. Chicago: Univ. of Chicago Press, 1964.
3. Bruner, Jerome S. *On Knowing: Essays for the Left Hand*. Cambridge: Belknap Press, 1963, pp. 150-151.
4. Campbell, Robert. "The Circuit of the Senses," in a series on "The Human Body" (Part IV). *Life*. Vol. 54, no. 26 (June 28, 1963).
5. Pfeiffer, John. *The Human Brain*. New York: Harper, 1955.
6. De Ropp, Robert S. *Drugs and the Mind*. New York: Grove Press, 1961.
7. Morgan, Clifford T. *Introduction to Psychology*. New York: McGraw-Hill, 1956, p. 588.
8. Siva Sankar, D. V., and Sankar, D. Barbara. "Biochemical Studies on Childhood Schizophrenia and Autism." *Federation Proceedings*. 1962, 21:348 (abstract).
Siva Sankar, D. V., Sankar, D. Barbara, Phipps, Edward, and Gold, Eleanor. "Effect of Administration of Lysergic Acid Diethylamide on Serotonin Levels in the Body." *Nature* (London), 1961, 191.
9. Rednick, Oscar, Krus, Donald M., and Raskin, Milton. Paper read at Federation of American Societies for Experimental Biology, 1964.
10. Leary, Timothy, Metzner, Ralph, and Alpert, Richard. *The Psychedelic Experience*. New Hyde, N. Y.: University Books, 1964.
11. Editors. "The Subjective After-Effects of Psychedelic Experiences: A summary of Four Recent Questionnaire Studies," *Psychedelic Review*. 1963, vol. I, no. 1.
12. Savage, Charles, Jackson, Donald D., and Terrill, James. "LSD, Transcendence and the New Beginning." Chapter 10 of this volume.
13. Leary, Timothy, Litwin, George H., and Metzner, Ralph. "Reactions to Psilocybin Administered in a Supportive Environment." *J. of Nervous & Mental Diseases*. December 1963, vol. 137, no. 6.
14. Unger, Sanford. "Mescalin, LSD, Psilocybin and Personality Change." Chapter 11 of this volume.
15. McGlothin, W. M. "Long-lasting Effects of LSD on Certain

Attitudes in Normals." Santa Monica: RAND Corporation (reprint), 1963.

16. Sherwood, J. N., Stoloroff, M. J., and Harmon, W. "The Psychedelic Experience—a New Concept in Psychotherapy." *J. of Neuropsychiatry*. 1962, vol. 3.
17. Pahnke, Walter. *Drugs and Mysticism: An Analysis of the Relationship Between Psychedelic Drugs and the Mystical Consciousness*. Ph.D. thesis, Harvard University, 1963.

1. PSYCHOPHARMACOLOGY: THE MANIPULATION OF THE MIND

HUMPHRY OSMOND, D.P.M.

One of mankind's oldest and most respectable activities has been to search for substances that change the mind in various ways. To ease physical pain and perhaps the even greater pain and bewilderment of being alive, to alter mood, especially low mood, to contract and sometimes to expand the limits of mind, all these have been from time immemorial the hunting ground of the forebears of psychopharmacology. The pioneers in this field have sometimes been revered and sometimes spurned, depending on the social climate of the time. Ulysses, Homer tells us, ran into difficulties when some of his crew joined the Lotus Eaters and encouraged others to leave—thus:

Leave us alone. What pleasure can we have
to war with evil? Is there any peace
In every climbing up the climbing wave
All things have rest and ripen toward the grave
In silence; ripen, fall and cease
Give us long rest, or death, dark death or dreamful ease.

Tennyson's lines suggest that he was writing about opium or something similar. In the England of his day, apart from alcohol, opium was the best mind changer and easily available. It played some part in the literary and philosophical development of the early nineteenth century, being a combination of pain-killer, tranquilizer and, in an uncertain manner, vision-inducing agent.

The first substance of which we have a record is soma, said to have been a creeping plant which has never been identified. High-caste Brahmins used it in India several thousand years ago for enlarging the mind. Soma was imported from beyond

the Himalayas and there were supply difficulties. It was either dangerous itself or perhaps easily confused with some poisonous plant, for numbers of these early experimenters died. It is thought that some forms of Yoga developed either as an attempt to enjoy the effects of soma less dangerously or to compensate for its loss when supplies failed.

All over the world men have discovered and often cultivated substances which change the mind more or less effectively—tobacco, for instance, which soon became the unsuccessful target of many fierce edicts. Oddly enough it seems to have been a matter of chance that tobacco rather than cohoba reached Europe in the late sixteenth century. This substance, deriving from a mimosalike plant, is thought to contain a powerful hallucinogen. It is interesting to speculate how it would have impinged upon that era of bigotry and imagination.

While tobacco has only recently been clearly shown to have grave secondary dangers, especially when smoked as cigarettes, alcohol, opium derivatives, the coca leaf and barbiturates are addictive, e.g., they produce a craving in some of those who take them with grave psychophysiological consequences which can only be relieved by taking more. Hashish, derived from the hemp plant, and peyote, the dried tops of a little furry succulent, *Lophophora Williamsii*, which grows in the American Southwest, are not addictive but produce remarkable psychological changes in those who take them.

Different cultures have accepted some tension-relieving substances and rejected others—a good example is the Muslim ban on alcohol while for a long time accepting hashish.

Experiments conducted over the last fifteen to twenty thousand years when our ancestors must have nibbled at everything in sight set the stage for a time when deliberate controlled chemical intervention in mental processes becomes possible. We are on the threshold of that age.

Man is not a domestic animal. The selective breeding necessary for domestication has never been applied to him, while in recent centuries his own social actions have altered the infringement of natural selection. Perhaps we are really wild animals tamed by social processes brought to bear during our prolonged infancy and childhood. Consequently a wide variety of humans survive, and this variety, while enhancing our creativity, results in increased social pressures. It is because we vary so much in temperament and endowment that the social

restraints necessary for our survival seem so burdensome. Men and women are caught between the millstones of their temperament and the customs of the society in which they find themselves and which they must accept in order to survive. When these two are at odds they become anxious, resentful, guilty or fearful, depending partly on their personal makeup and partly on the emotional expression which their particular society allows. Some cultures seem to have fewer deviant people than others. This may be due to a greater tolerance or, equally, to their not allowing deviants to survive.

It is only in the last six to seven thousand years at most that men have begun to build permanent townships, and since then the need for ways of reducing tension without grave social, psychological or physical damage have become increasingly necessary. There are many animals which, whenever crowded beyond a certain point, die off. Their endocrine glands are disrupted. Men are generally tougher than animals and can survive worse circumstances. In recent years we have learned how to stem many of those epidemics which thin out over-crowded animals. We pay for this. We have to get closer together and yet have a proportion of our species who are poorly adapted to herd life but are valuable to us. In addition we cannot allow many extroverted people to act out as boldly and continuously as was once possible. Our world has grown too small. What can psychopharmacology do about this?

As I have noted, early in the nineteenth century many philosophers and poets were more or less addicted to opium. Ordinary folk had to make do with gin or worse. Toward the end of the same century whole new families of sedatives and tension-relieving substances were discovered, starting with bromides, soon followed by chloral, cocaine and later the first barbiturates. In the 1880's Freud made one of his earliest forays into psychiatry by attempting to cure another doctor who was addicted to morphine by giving him cocaine. He was warned correctly, but too late, that this could only result in a double addiction. The young contemporary who gave him this warning was Louis Lewin, the founder of psychopharmacology.

Until the start of the twentieth century psychopharmacology had been mainly concerned with sedatives, pain-relieving and sleep-producing drugs. But Louis Lewin's work encouraged a wider interest whose implications are slowly becoming clearer.

His classification may differ from the one we use now, but it is still useful and his splendid book* is extremely stimulating.

During the first half of the twentieth century knowledge increased slowly. In the 1920's more barbiturates were synthesized, and this engendered new possibilities for addiction which speedily and tragically developed. Barbiturate poisoning is now one of the main means of suicide in the Western world. Yet these same man- and woman-killing chemicals have been enormously valuable, particularly in inducing sleep and anaesthesia. As with other inventions every new psychopharmacological substance presents opportunities for use and abuse.

During the early 1930's Amphetamine and many related compounds were developed. These had some of the energizing and euphoriant effects of cocaine but did not seem to be so dangerously addictive. This group of substances produces in some—but not by any means all of those who take them—a feeling of well-being, a lessening of fatigue, reduction in appetite accompanied by tension, irritability and sometimes sleeplessness. When these effects wear off a few people become unusually depressed. Quite small single or continuous doses make a few of those who take Amphetamine seriously muddled and disturbed. In Japan since the war substances of this sort have been widely used, and according to the W.H.O. there are hundreds of thousands addicted to them. Some of these addicts also have schizophrenic episodes indistinguishable from the great psychosis, lasting six to eight weeks after they have stopped taking the drug. During World War II the Luftwaffe used a similar compound to reduce fatigue in its bomber pilots, but had to stop it because a number of psychotic illnesses occurred. Oddly enough faulty intelligence reports led the Americans to think that adrenocortical hormones were being employed against fatigue, and so Cortisone was developed.

In the early 1950's the tempo of psychopharmacology changed and work is proceeding far faster, more extensively and, incidentally, more expensively than ever before. Two

* Lewin's great book, *Phantastica*, has been out of print for many years. Ironically it was published at a time when its extraordinary quality was not fully appreciated and it sold very few (comparatively) copies. Now when it is widely recognized as a classic it is almost impossible to get, and the publishers, discouraged by their experience of over thirty years ago, have proved unwilling to produce another English edition—even though its reappearance would be welcomed the world over.

large groups of tranquilizing substances whose common properties are to reduce agitation have been discovered. There are derivatives from *Rauwolfia serpentina*, a traditional Indian remedy, which has been used for centuries in that country. But even more promising have been Chlorpromazine and its many relatives whose names decorate medical journals and puzzle all but the most industrious and gullible medical men. This latter family of drugs derived from the observation that certain antihistaminic compounds, though not very effective in this capacity, reduce the fierceness of some of the animals used in testing them. Tranquilizing substances are numerous and widely advertised—but their importance may eventually be that they will lead us to a better understanding of those bodily processes which prevent abnormal tension and agitation.

New substances which have similar or better effects than Amphetamine are also being produced.

Lastly we are gaining a much greater understanding of the way in which the enormously powerful lysergic acid diethylamide produces its characteristic changes in perception, thinking and mood. Many new chemicals with rather similar effects have been discovered. We must hope then that in a decade or two most of the substances which I have discussed so far will be outmoded, because by then we should have greater knowledge of the underlying psychophysiological bases of these various mental changes. One cannot exaggerate the importance of a fuller understanding of such vital mechanisms. We have clear warnings that this will happen, and when it does our species will be faced with remarkable opportunities for disastrous folly or triumphant change. As an Englishman, I trust that we shall muddle through.

Our whole civilization has been packed into about 200 generations or so and the last two have seen more change than any twenty that have gone before. How can we meet these dizzying challenges—not only with equanimity and good sense, but also with inspiration?

Clearly we must know enough about ourselves, the running of human affairs, and our relationships with people whose language and culture differ from our own so that we can avoid putting them or ourselves into impossible positions. In this way we can hope that hasty, imprudent and downright murderous folly can be avoided. While this is being done some

immediate help and relief will be required. What can psychopharmacology contribute?

Our nervous systems and the glands which influence them and form part of them developed hundreds of thousands of years ago to meet the needs of a timid, naked, wild animal who was learning how to control fire, make weapons and survive in very small societies. We were never domesticated but our long childhood has allowed a fairly effective training and taming to occur. But the advantage of our long childhood will not necessarily be enough to let us deal wisely with the maelstrom of change in which we are now submerged, change which can only be met by sustained, thoughtful, kindly, cooperative action. This is an age when we need above all Ulysses, the man who thinks his way out of trouble, rather than Achilles, Hector and Ajax who hack, cut or butt at it. Such men may have been heroic once, but now they are simply suicidal. We must learn to live with our nervous systems, and a greater and more precise knowledge of their chemistry will certainly allow us to do so.

But as soon as one avoids Scylla there is always Charybdis. To survive must we become torpid and vegetable, perhaps unworried but also unspontaneous, unimaginative and so scarcely human? Mescaline and LSD, I suggest, are perhaps the precursors of chemical instruments which I have called psychedelics or mind manifestors. Properly used these can let us explore and expand our vision of ourselves, our fellow men and women, the world and the cosmos in which we are. If we wish it, this expansion of consciousness can be used to increase our awareness of and sensitivity toward mankind. There is evidence accumulating which suggests this could be done. But do we want to? This the psychopharmacologist cannot answer. All he can tell us is that the tools or weapons are or very soon will be at hand. What will we do with them? They can be wasted on trivialities, they can be used to persecute, annoy, threaten, irritate or harass our neighbors. Or they can become tools to allow that timid biped of fifty thousand years ago to assist in his own transformation into a thinking, feeling, perceiving and imagining creature of a few thousand years ahead who will view us with the amused disbelief with which we look at Neanderthal man.

We cannot tell what will happen but we should at least acquit ourselves as well as Ulysses of whom Tennyson wrote:

To strive, to seek, to find and not to yield.

But to succeed in such an adventure requires a different attitude toward the universe than that of Ulysses, wider than any that we now hold. An attitude where the Divine Imagination of the poet William Blake will be cherished and cultivated rather than allowed to grow where the seed falls.

An explorer from another galaxy would find mankind all very much alike. The few superficial differences would seem trivial to him or it. Whether such an observer felt that we should be quickly exterminated or not would depend more than anything else upon the way in which we and he regard the universe.

No one can force us to explore ourselves as thoroughly as we have explored the world and space around us, but perhaps psychopharmacology can allow us to be calm enough to consider the matter seriously and have an opportunity to do so should we wish it. As a member of our species—not as someone from a particular nation, color, creed or culture, or even from a particular segment of time—I wonder what we will do about it.

2. CULTURE AND THE INDIVIDUAL

ALDOUS HUXLEY

Between culture and the individual the relationship is, and always has been, strangely ambivalent. We are at once the beneficiaries of our culture and its victims. Without culture, and without that precondition of all culture, language, man would be no more than another species of baboon. It is to language and culture that we owe our humanity. And "What a piece of work is a man!" says Hamlet: "How noble in reason! how infinite in faculties! . . . in action how like an angel! in apprehension, how like a god!" But, alas, in the intervals of being noble, rational and potentially infinite,

man, proud man,
Dressed in a little brief authority,
Most ignorant of what he is most assured,
His glassy essence, like an angry ape,
Plays such fantastic tricks before high heaven
As make the angels weep.

Genius and angry ape, player of fantastic tricks and godlike reasoner—in all these roles individuals are the products of a language and a culture. Working on the twelve or thirteen billion neurons of a human brain, language and culture have given us law, science, ethics, philosophy; have made possible all the achievements of talent and of sanctity. They have also given us fanaticism, superstition and dogmatic bumptiousness; nationalistic idolatry and mass murder in the name of God; rabble-rousing propaganda and organized lying. And, along with the salt of the earth, they have given us, generation after generation, countless millions of hypnotized conformists, the

predestined victims of power-hungry rulers who are themselves the victims of all that is most senseless and inhuman in their cultural tradition.

Thanks to language and culture, human behavior can be incomparably more intelligent, more original, creative and flexible than the behavior of animals, whose brains are too small to accommodate the number of neurons necessary for the invention of language and the transmission of accumulated knowledge. But, thanks again to language and culture, human beings often behave with a stupidity, a lack of realism, a total inappropriateness, of which animals are incapable.

Trobriand Islander or Bostonian, Sicilian Catholic or Japanese Buddist, each of us is born into some culture and passes his life within its confines. Between every human consciousness and the rest of the world stands in invisible fence, a network of traditional thinking-and-feeling patterns, of secondhand notions that have turned into axioms, of ancient slogans revered as divine revelations. What we see through the meshes of this net is never, of course, the unknowable "thing in itself." It is not even, in most cases, the thing as it impinges upon our senses and as our organism spontaneously reacts to it. What we ordinarily take in and respond to is a curious mixture of immediate experience with culturally conditioned symbol, of sense impressions with preconceived ideas about the nature of things. And by most people the symbolic elements in this cocktail of awareness are felt to be more important than the elements contributed by immediate experience. Inevitably so, for, to those who accept their culture totally and uncritically, words in the familiar language do not stand (however inadequately) for things. On the contrary, things stand for familiar words. Each unique event of their ongoing life is instantly and automatically classified as yet another concrete illustration of one of the verbalized, culture-hallowed abstractions drummed into their heads by childhood conditioning.

It goes without saying that many of the ideas handed down to us by the transmitters of culture are eminently sensible and realistic. (If they were not, the human species would now be extinct.) But, along with these useful concepts, every culture hands down a stock of unrealistic notions, some of which never made any sense, while others may once have possessed survival value, but have now, in the changed and changing circumstances of ongoing history, become completely irrelevant. Since

human beings respond to symbols as promptly and unequivocally as they respond to the stimuli of unmediated experience, and since most of them naively believe that culture-hallowed words about things are real as, or even realer than their perceptions of the things themselves, these outdated or intrinsically nonsensical notions do enormous harm. Thanks to the realistic ideas handed down by culture, mankind has survived and, in certain fields, progresses. But thanks to the pernicious nonsense drummed into every individual in the course of his acculturation, mankind, though surviving and progressing, has always been in trouble. History is the record, among other things, of the fantastic and generally fiendish tricks played upon itself by culture-maddened humanity. And the hideous game goes on.

What can, and what should, the individual do to improve his ironically equivocal relationship with the culture in which he finds himself embedded? How can he continue to enjoy the benefits of culture without, at the same time, being stupefied or frenziedly intoxicated by its poisons? How can he become discriminatively acculturated, rejecting what is silly or downright evil in his conditioning, and holding fast to that which makes for humane and intelligent behavior?

A culture cannot be discriminatively accepted, much less be modified, except by persons who have seen through it—by persons who have cut holes in the confining stockade of verbalized symbols and so are able to look at the world and, by reflection, at themselves in a new and relatively unprejudiced way. Such persons are not merely born; they must also be made. But how?

In the field of formal education, what the would-be hole cutter needs is knowledge. Knowledge of the past and present history of cultures in all their fantastic variety, and knowledge about the nature and limitations, the uses and abuses, of language. A man who knows that there have been many cultures, and that each culture claims to be the best and truest of all, will find it hard to take too seriously the boastings and dogmatizings of his own tradition. Similarly, a man who knows how symbols are related to experience, and who practices the kind of linguistic self-control taught by the exponents of General Semantics, is unlikely to take too seriously the absurd or dangerous nonsense that, within every culture, passes for philosophy, practical wisdom and political argument.

As a preparation for hole cutting, this kind of intellectual

education is certainly valuable, but no less certainly insufficient. Training on the verbal level needs to be supplemented by training in wordless experiencing. We must learn how to be mentally silent, must cultivate the art of pure receptivity.

To be silently receptive—how childishly simple that seems! But in fact, as we very soon discover, how difficult! The universe in which men pass their lives is the creation of what Indian philosophy calls *Nama-Rupa*, Name and Form. Reality is a continuum, a fathomlessly mysterious and infinite Something, whose outward aspect is what we call Matter and whose inwardness is what we call Mind. Language is a device for taking the mystery out of Reality and making it amenable to human comprehension and manipulation. Acculturated man breaks up the continuum, attaches labels to a few of the fragments, projects the labels into the outside world and thus creates for himself an all-too-human universe of separate objects, each of which is merely the embodiment of a name, a particular illustration of some traditional abstraction. What we perceive takes on the pattern of the conceptual lattice through which it has been filtered. Pure receptivity is difficult because man's normal waking consciousness is always culturally conditioned. But normal waking consciousness, as William James pointed out many years ago, "is but one type of consciousness, while all about it, parted from it by the filmiest of screens, there lie potential forms of consciousness entirely different. We may go through life without suspecting their existence; but apply the requisite stimulus, and at a touch they are there in all their completeness, definite types of mentality which probably somewhere have their field of application and adaptation. No account of the universe in its totality can be final which leaves these forms of consciousness disregarded."

Like the culture by which it is conditioned, normal waking consciousness is at once our best friend and a most dangerous enemy. It helps us to survive and make progress; but at the same time it prevents us from actualizing some of our most valuable potentialities and, on occasion, gets us into all kinds of trouble. To become fully human, man, proud man, the player of fantastic tricks, must learn to get out of his own way; only then will his infinite faculties and angelic apprehension get a chance of coming to the surface. In Blake's words, we must "cleanse the doors of perception"; for when the doors of per-

ception are cleansed, "everything appears to man as it is—infinite." To normal waking consciousness things are the strictly finite and insulated embodiments of verbal labels. How can we break the habit of automatically imposing our prejudices and the memory of culture-hallowed words upon immediate experience? Answer: by the practice of pure receptivity and mental silence. These will cleanse the doors of perception and, in the process, make possible the emergence of other than normal forms of consciousness—aesthetic consciousness, visionary consciousness, mystical consciousness. Thanks to culture we are the heirs to vast accumulations of knowledge, to a priceless treasure of logic and scientific method, to thousands upon thousands of useful pieces of technological and organizational know-how. But the human mind-body possesses other sources of information, makes use of other types of reasoning, is gifted with an intrinsic wisdom that is independent of cultural conditioning.

Wordsworth writes that "our meddling intellect [that part of the mind which uses language to take the mystery out of Reality] misshapes the beauteous forms of things: we murder to dissect." Needless to say, we cannot get along without our meddling intellect. Verbalized conceptual thinking is indispensable. But even when they are used well, verbalized concepts misshape "the beauteous forms of things." And when (as happens so often) they are used badly, they misshape our lives by rationalizing ancient stupidities, by instigating mass murder, persecution and the playing of all the other fantastically ugly tricks that make the angels weep. Wise nonverbal passiveness is an antidote to unwise verbal activity and a necessary corrective to wise verbal activity. Verbalized concepts about experience need to be supplemented by direct, unmeditated acquaintance with events as they present themselves to us.

It is the old story of the letter and the spirit. The letter is necessary, but must never be taken too seriously; for, divorced from the spirit, it cramps and finally kills. As for the spirit, it "bloweth where it listeth" and, if we fail to consult the best cultural charts, we may be blown off our course and suffer shipwreck. At present most of us make the worst of both worlds. Ignoring the freely blowing winds of the spirit and relying on cultural maps which may be centuries out-of-date, we rush full speed ahead under the high-pressure steam of our

own over-weaning self-confidence. The tickets we have sold ourselves assure us that our destination is some port in the Islands of the Blest. In fact it turns out, more often than not, to be Devil's Island.

Self-education on the nonverbal level is as old as civilization. "Be still and know that I am God"—for the visionaries and mystics of every time and every place, this has been the first and greatest of the commandments. Poets listen to their Muse and in the same way the visionary and the mystic wait upon inspiration in a state of wise passiveness, of dynamic vacuity. In the Western tradition this state is called "the prayer of simple regard." At the other end of the world it is described in terms that are psychological rather than theistic. In mental silence we "look into our own Self-Nature," we "hold fast to the Not-Thought which lies in thought," we "become that which essentially we have always been." By wise activity we can acquire useful analytical knowledge about the world, knowledge that can be communicated by means of verbal symbols. In the state of wise passiveness we make possible the emergence of forms of consciousness other than the utilitarian consciousness of normal waking life. Useful analytical knowledge about the world is replaced by some kind of biologically inessential but spiritually enlightening acquaintance with the world. For example, there can be direct aesthetic acquaintance with the world as beauty. Or there can be direct acquaintance with the intrinsic strangeness of existence, its wild implausibility. And finally there can be direct acquaintance with the world's unity. This immediate mystical experience of being at one with the fundamental Oneness that manifests itself in the infinite diversity of things and minds, can never be adequately expressed in words. Like visionary experience, the experience of the mystic can be talked about only from the outside. Verbal symbols can never convey its inwardness.

It is through mental silence and the practice of wise passiveness that artists, visionaries and mystics have made themselves ready for the immediate experience of the world as beauty, as mystery and as unity. But silence and wise passiveness are not the only roads leading out of the all-too-human universe created by normal, culture-conditioned consciousness. In *Ex-postulation and Reply*, Wordsworth's bookish friend, Matthew, reproaches the poet because

You look round on your Mother Earth,
As if she for no purpose bore you;
As if you were her first-born birth,
And none had lived before you!

From the point of view of normal waking consciousness, this is sheer intellectual delinquency. But it is what the artist, the visionary and the mystic must do and, in fact, have always done. "Look at a person, a landscape, any common object, as though you were seeing it for the first time." This is one of the exercises in immediate, unverbalized awareness prescribed in the ancient texts of Tantric Buddhism. Artists, visionaries and mystics refuse to be enslaved to the culture-conditioned habits of feeling, thought and action which their society regards as right and natural. Whenever this seems desirable, they deliberately refrain from projecting upon reality those hallowed word patterns with which all human minds are so copiously stocked. They know as well as anyone else that culture and the language in which any given culture is rooted, are absolutely necessary and that, without them, the individual would not be human. But more vividly than the rest of mankind they also know that, to be *fully* human, the individual must learn to de-condition himself, must be able to cut holes in the fence of verbalized symbols that hemms him in.

In the exploration of the vast and mysterious world of human potentialities the great artists, visionaries and mystics have been trailblazing pioneers. But where they have been, others can follow. Potentially, all of us are "infinite in faculties and like gods in apprehension." Modes of consciousness different from normal waking consciousness are within the reach of anyone who knows how to apply the necessary stimuli. The universe in which a human being lives can be transfigured into a new creation. We have only to cut a hole in the fence and look around us with what the philosopher, Plotinus, describes as "that other kind of seeing, which everyone has but few make use of."

Within our current systems of education, training on the nonverbal level is meager in quantity and poor in quality. Moreover, its purpose, which is simply to help its recipients to be more "like gods in apprehension" is neither clearly stated nor consistently pursued. We could and, most emphatically, we should do better in this very important field than we are doing now. The practical wisdom of earlier civilizations and

the findings of adventurous spirits within our own tradition and in our own time are freely available. With their aid a curriculum and a methodology of nonverbal training could be worked out without much difficulty. Unhappily most persons in authority have a vested interest in the maintenance of cultural fences. They frown upon hole cutting as subversive and dismiss Plotinus' "other kind of seeing" as a symptom of mental derangement. If an effective system of nonverbal education could be worked out, would the authorities allow it to be widely applied? It is an open question.

From the nonverbal world of culturally uncontaminated consciousness we pass to the subverbal world of physiology and biochemistry. A human being is a temperament and a product of cultural conditioning; he is also, and primarily, an extremely complex and delicate biochemical system, whose inwardness, as the system changes from one state of equilibrium to another, is changing consciousness. It is because each one of us is a biochemical system that (according to Housman)

Malt does more than Milton can
To justify God's ways to man.

Beer achieves its theological triumphs because, in William James' words, "Drunkenness is the great exciter of the *Yes* function in man." And he adds that "It is part of the deeper mystery and tragedy of life that whiffs and gleams of something that we immediately recognize as excellent should be vouchsafed to so many of us only in the fleeting earlier phases of what, in its totality, is so degrading a poisoning." The tree is known by its fruits, and the fruits of too much reliance upon ethyl alcohol as an exciter of the *Yes* function are bitter indeed. No less bitter are the fruits of reliance upon such habit-forming sedatives, hallucinogens and mood elevators as opium and its derivatives, as cocaine (once so blithely recommended to his friends and patients by Dr. Freud), as the barbiturates and amphetamine. But in recent years the pharmacologists have extracted or synthesized several compounds that powerfully affect the mind without doing any harm to the body, either at the time of ingestion or, through addiction, later on. Through these new psychedelics, the subject's normal waking consciousness may be modified in many different ways. It is as though, for each individual, his deeper self decides which

kind of experience will be most advantageous. Having decided, it makes use of the drug's mind-changing powers to give the person what he needs. Thus, if it would be good for him to have deeply buried memories uncovered, deeply buried memories will duly be uncovered. In cases where this is of no great importance, something else will happen. Normal waking consciousness may be replaced by aesthetic consciousness, and the world will be perceived in all its unimaginable beauty, all the blazing intensity of its "thereness." And aesthetic consciousness may modulate into visionary consciousness. Thanks to yet another kind of seeing, the world will now reveal itself as not only unimaginably beautiful, but also fathomlessly mysterious—as a multitudinous abyss of possibility forever actualizing itself into unprecedented forms. New insights into a new, transfigured world of givenness, new combinations of thought and fantasy—the stream of novelty pours through the world in a torrent, whose every drop is charged with meaning. There are the symbols whose meaning lies outside themselves in the given facts of visionary experience, and there are these given facts which signify only themselves. But "only themselves" is also "no less than the divine ground of all being." "Nothing but this" is at the same time "the Suchness of all." And now the aesthetic and the visionary consciousness deepen into mystical consciousness. The world is now seen as an infinite diversity that is yet a unity, and the beholder experiences himself as being at one with the infinite Oneness that manifests itself, totally present at every point of space, at every instant in the flux of perpetual perishing and perpetual renewal. Our normal word-conditioned consciousness creates a universe of sharp distinctions, black and white, this and that, me and you and it. In the mystical consciousness of being at one with infinite Oneness, there is a reconciliation of opposites, a perception of the Not-Particular in particulars, a transcending of our ingrained subject-object relationships with things and persons; there is an immediate experience of our solidarity with all beings and a kind of organic conviction that in spite of the inscrutabilities of fate, in spite of our own dark stupidities and deliberate malevolence, yes, in spite of all that is so manifestly wrong with the world, it is yet, in some profound, paradoxical and entirely inexpressible way, All Right. For normal waking consciousness, the phrase, "God is Love," is no more than a

piece of wishful positive thinking. For the mystical consciousness, it is a self-evident truth.

Unprecedented rapid technological and demographic changes are steadily increasing the dangers by which we are surrounded, and at the same time are steadily diminishing the relevance of the traditional feeling-and-behavior patterns imposed upon all individuals, rulers and ruled alike, by their culture. Always desirable, widespread training in the art of cutting holes in cultural fences is now the most urgent of necessities. Can such a training be speeded up and made more effective by a judicious use of the physical harmless psychedelics now available? On the basis of personal experience and the published evidence, I believe that it can. In my Utopian fantasy, *Island*, I speculated in fictional terms about the ways in which a substance akin to psilocybin could be used to potentiate the non-verbal education of adolescents and to remind adults that the real world is very different from the misshapen universe they have created for themselves by means of their culture-conditioned prejudices. "Having Fun with Fungi"—that was how one waggish reviewer dismissed the matter. But which is better: to have Fun with Fungi or to have Idiocy with Ideology, to have Wars because of Words, to have Tomorrow's Misdeeds out of Yesterday's Miscreeds?

How should the psychedelics be administered? Under what circumstances, with what kind of preparation and follow-up? These are questions that must be answered empirically, by large-scale experiment. Man's collective mind has a high degree of viscosity and flows from one position to another with the reluctant deliberation of an ebbing tide of sludge. But in a world of explosive population increase, of headlong technological advance and of militant nationalism, the time at our disposal is strictly limited. We must discover, and discover very soon, new energy sources for overcoming our society's psychological inertia, better solvents for liquefying the sludgy stickiness of an anachronistic state of mind. On the verbal level an education in the nature and limitations, the uses and abuses of language; on the wordless level an education in mental silence and pure receptivity; and finally, through the use of harmless psychedelics, a course of chemically triggered conversion experiences or ecstasies—these, I believe, will provide all the sources of mental energy, all the solvents of conceptual sludge, that an individual requires. With their aid, he

should be able to adapt himself selectively to his culture, rejecting its evils, stupidities and irrelevances, gratefully accepting all its treasures of accumulated knowledge, of rationality, human-heartedness and practical wisdom. If the number of such individuals is sufficiently great, if their quality is sufficiently high, they may be able to pass from discriminating acceptance of their culture to discriminating change and reform. Is this a hopefully Utopian dream? Experiment can give us the answer, for the dream is pragmatic; the Utopian hypothesis can be tested empirically. And in these oppressive times a little hope is surely no unwelcome visitant.

3. THE HALLUCINOGENS: A REPORTER'S OBJECTIVE VIEW

DAN WAKEFIELD

"... Our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst all about it, parted from it by the filmiest of screens, there lie potential forms of consciousness entirely different. . . . No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. How to regard them is the question. . . ."

This question raised by psychologist William James more than half a century ago is no longer academic. The use of new drugs that bring about "these other forms of consciousness" has become an explosive issue in scientific, medical, religious, and educational circles and a source of increasing fascination for the public. James was led to consider the question while reporting on the powers of nitrous oxide, commonly known as laughing gas, to "stimulate the mystical consciousness" and today such stimulation by newer types of "hallucinogenic"—or hallucination-producing—drugs such as mescaline, LSD and psilocybin is being explored by growing numbers of amateur as well as professional experimenters. Psychologists, hipsters, ministers, mental patients, movie stars, housewives and college students have taken these drugs in the past several years, with results ranging from hellish to heavenly—as well as nothing more than ordinary nausea.

The interest as well as the controversy stirred by these substances has grown ever since the accidental discovery of LSD-25 (the shorthand name for lysergic acid diethylamide) in 1943 and scientists were faced with the problem, as candidly described in a medical journal, of "what to do with it." Writing more than a decade after its discovery, the researcher wryly noted that the drug had already been used for "almost every-

thing from distorting spider webs and scaring salamanders to 'shaking up' psychological trainees or having LSD social parties, to curing schizophrenia." The various hallucinogens (they are similar in makeup and effects) have also been used, or proposed for use in the future, as a cure for alcoholism, a means of transcending what has been called the dim and drab world of everyday existence, a therapeutic aid in treating neurotics, a means of instant self-understanding, a spur to creativity, the key to a modern religious revival, and a substitute for cigarettes. This promise-filled horizon, however, is clouded by the darker effects of the drugs that have led to a strong editorial "warning" in a recent issue of the AMA's *Archives of Psychiatry* that "Latent psychotics are disintegrating under the influence of even single doses [of LSD]; long-continued LSD experiences are subtly creating a pathology. Psychic addiction is being developed and the lay public is looking for psychiatrists who specialize in its administration." The editorial concluded by cautioning the psychiatric profession that "greater morbidity, and even mortality, is in store for its patients unless controls are developed against the unwise use of LSD-25."

While widespread public interest in these drugs is a recent phenomenon, hallucinogens have been used in their natural forms for at least 3,000 years. It may seem a wonder that men ever got around to such mundane pursuits as plowing and planting at all after finding the artificial paradises offered by the hallucinogens; but Gordon Wasson, a banker who has gained renown through his study of mushrooms, believes that rather than holding man back, the hallucinogens (especially the mushroom varieties) were probably responsible for the origins of human culture.

Banker Wasson brought new scientific attention to the powers of the mushroom when he journeyed to a remote Mexican village in Oaxaca province in 1953, and discovered the hallucinating "sacred mushrooms" (*Psilocybe mexicana*) which had been providing the natives with visions for more than four centuries. They transported Wasson as well, taking him to realms of the mind such as one he reported when "I saw a mythological beast drawing a regal chariot. Later it was as though the walls of our house had dissolved, and my spirit flown forth, and I was suspended in midair viewing landscapes of mountains."

Wasson's reports excited scientists who soon synthesized the active chemicals into psilocybin, the newest of the hallucinatory drugs, and stimulated fresh interest in its chemical companions. Though mushrooms lately have attracted more historical interest than the other hallucinogens, they are only one of a galaxy of flowers, roots, seeds and plants that men have used in all ages and all parts of the world to escape to a world of visions; there are 13 *phantastica* (the original botanical name given to the hallucinogens) used by the Indians of Mexico alone. Peruvian Indians prepare a hallucinating brew from a jungle vine called caapi or yajé, and natives in the Orinoco basin use a hallucinatory snuff known as *yopo*.

Until very recently the only interest that people of advanced civilizations took in these practices was trying to stop them. Spanish conquistadors outlawed the rites of the sacred mushrooms among the Indians of Mexico, with the result that the practice went underground and was altered mainly by the addition of Roman Catholic symbolism to the ceremony. The U.S. Bureau of Indian Affairs and assorted Christian missionaries met with similar results when they tried to stamp out the Peyote religion of the Indians of the Southwest. The principle effect of nearly half a century of trying to suppress this native religious cult was that Jesus Christ replaced the Thunderbird as the main object of worship in the ritual. But at least one man who heard about the vision-making powers of the Indians' peyote was more interested in learning about the drug than in suppressing it. Neurologist Weir Mitchell, a friend of Walt Whitman, chewed the "mescal buttons" of the peyote cactus in the late 19th Century and reported: "Stars, delicate floating films of color, then an abrupt rush of countless points of white light swept across the field of view, as if the unseen millions of the Milky Way were to flow in a sparkling river before my eyes . . . zigzag lines of very bright colors . . . the wonderful loveliness of swelling clouds of more vivid colors gone before I could name them."

Mitchell's enthusiastic descriptions of the provinces of peyote aroused the interest of William James, and were even tantalizing enough to cause Havelock Ellis to take time out from his studies of sex to investigate hallucinatory mysteries. A few scattered scientists took up the threads of this early research, but the recent explosion of interest in hallucinogens didn't occur until a chemist in Switzerland took one by mistake.

—a mistake that has, in the words of one medical expert, "precipitated the whole field of biochemistry into a new look at the brain."

One April afternoon in 1943, Dr. Albert Hofmann was in his laboratory in Basel working on a new compound of lysergic acid, derived from a common fungus called ergot. Unknowingly, he swallowed some of this powerful chemical. He began to feel dizzy, decided that he must be ill, and went home. It was soon clear that his illness was not an ordinary one, for when he went to bed he found himself "in a not unpleasant state of drunkenness which was characterized by an extremely stimulating fantasy. When I closed my eyes (the daylight was most unpleasant to me) I experienced fantastic images of an extraordinary plasticity. They were associated with an intense kaleidoscopic play of colors. After about two hours this condition disappeared."

Suspecting that this experience might have been caused by the drug he was working with, Dr. Hofmann took some intentionally several days later. This time the effects struck him "like a bolt of lightning," and when he got on his bicycle to go home, time and space seemed out of joint. The short distance he had to pedal was like a journey of thousands of miles. The drug he synthesized, LSD-25, was the first hallucinogen produced in a laboratory since Sir Humphry Davy concocted laughing gas (nitrous oxide) in 1799.

The scientific and medical interest aroused by LSD-25 set chemists to work producing other new hallucinogens given such Brave New World names as JB-239 and IT-290. As well as the work on these substances made from combinations of chemicals, research was revived on mescaline, synthesized from the mescal buttons of the peyote cactus, and more investigations were inspired when Wasson's sacred mushrooms were synthesized into psilocybin. It was soon found that these drugs were not only capable of producing hallucinations but also were believed to produce in healthy persons many of the actual symptoms experienced by schizophrenics—the feeling of being divided into two separate beings, distortions of time, space and sound, and a tremendous intensity of colors and light (one former patient described the state of schizophrenia as "the country of lit-upness").

Studying the effects of these model psychoses produced by mescaline sulfate, two Canadian doctors advanced the theory

that schizophrenia was caused by a substance similar to mescaline produced in the body during times of stress. This revolutionary idea opened up whole new avenues of attack on schizophrenia, the mental disease that has been described as "the greatest of all public health problems," and also set off resounding theoretical warfare about the causes of mental illness.

Freud-scoffers used the new theory to argue that all mental problems were the result of physical disorders, and that a middle-aged man's melancholia, for instance, was produced by a bad chemical in his system rather than bad treatment from his mother at the age of three. Yet Freud himself had said that "Psychoanalysis never claimed that there were no organic factors in the psychoses. . . . It is the biochemist's task to find out what these are. . . . So long as organic factors remain inaccessible, analysis leaves much to be desired."

Recent reports have increasingly disputed the model-psychoses theory of the hallucinogens and more interest has been shown in their use as an aid in psychotherapy to facilitate insight into the patient's problems. But most doctors still consider hallucinatory drugs too dangerous and unpredictable for widespread use in treatment. Until quite recently, reports of such treatment were limited to medical journals, but in 1962 one of the small number of patients to undergo therapy with LSD wrote a confessionlike book about her experience which may yet start a general clamor for drug therapy from thousands of American women. The author, a housewife and mother, describes in vivid detail how she was cured of sexual frigidity.

Constance A. Newland, the pseudonym of the author of *Myself and I* was "a widow of respectable age and weight and height, in excellent health, who loved and cared for her children by pursuing a career as a writer" when she volunteered for a psychotherapeutic experiment with LSD. She had been through an orthodox psychoanalysis, but still had not overcome her frigidity. Under LSD Miss Newland plunged back into childhood traumas and fantasies, pursuing their meaning with the help of the therapist and recording the details of her sessions in extensive notes. She later used these to write her book, in which there are chapters titled, "The Closed Up Clam," "The Purplish Poison Peapod," and "The Slim Black Nozzle." After struggling through nearly every fearful Freud-

ian fantasy imaginable, Miss Newland finally found fulfillment with a fantasized man who looked like Michelangelo's statue of David:

"Somehow . . . somehow . . . in the act of love. . . . I became both David the Man and Myself the Woman. Together we reached ecstasy, twin ecstasy. And together we dissolved, in ecstasy, into the Energy which exists before Matter. And there, in pure Energy, was All-Knowledge, miraculous realm where I wanted to linger and linger—"

Miss Newland, however, returned to her household and a graduate course in psychology—although with "new savor . . . new meaning" in her life. The transformed author conscientiously explains that the mere taking of the drug was not what caused a cure: "It cannot be emphasized too strongly that LSD is merely an adjunct to therapy, a powerful adjunct which should be administered only by skilled psychotherapists." Her caution about the drug is underscored in an introduction by Dr. R. A. Sandison, who emphasizes that "It must be remembered that we are still far from perfecting this treatment, and that if its many dangers are to be avoided it must be carried out in a hospital or clinic environment by skilled therapists."

Reports from such experimental clinics indicate a variety of results, but hopeful signs have come from some of them: A Canadian hospital treating hard-core alcoholics with LSD therapy showed results of 100 cases with 52 "much improved," 29 "improved" and 19 "no change." A group of English doctors found that LSD treatment helped 61 of 100 mental patients to "recover or improve," but their report in the *London Journal of Mental Science* stressed the enormous dangers as well as the benefits of this new type of treatment.

The English doctors pointed out that the drugs make the symptoms of real psychotics even worse, but can sometimes produce dramatic results in helping psychoneurotics (like the formerly frigid Miss Newland). LSD especially has the effect of bringing back painful childhood memories, "sometimes even to the moment of birth," according to the *Journal of Mental Science*. But the sudden raising of these long-buried thoughts, which are only extracted in psychoanalysis after years of digging, can be dangerously disturbing. The English physicians reported that "one patient attempted to strangle herself at the height of the LSD reaction," while "three others have expressed

urgent desires to go and throw themselves in the nearby river, and had to be restrained from doing so."

The main difference among the three leading hallucinogens is in their potency; the synthetic LSD, strongest of all, is rated 100 times as powerful as psilocybin (derived from the Mexican mushroom) and 7,000 times as powerful as mescaline (a peyote derivative). A minute speck of LSD that weighs no more than 1/200,000 of an ounce is capable of producing the hallucinogenic effects, while proportionately larger doses of the other drugs are needed to produce similar kinds of chemical experience. The time of onset of the drug's action, when taken on an empty stomach, is 20 to 30 minutes for LSD and psilocybin, and one to two hours for mescaline. The duration of the drug experience is usually eight to ten hours with LSD and mescaline, and five to six hours with psilocybin. Aside from these distinctions, the action of the drugs is similar.

Their effects are not limited to the period of intoxication, but may arise days, weeks, or even months *after* a person has taken them. Doctors at the University of Cambridge studying delayed reactions to mescaline reported the case of one man who had severe attacks of panic after the intoxication wore off, and another who for several months after taking the drug saw "statues in churches and museums . . . move in a lifelike way." A volunteer experimenter who had no previous history of psychosis or neurosis, and only experienced a mild effect under mescaline, began to suffer from fatigue and lack of sleep several weeks after he had taken the drug.

The dangers of using hallucinogens have been reported by a number of medical researchers, but the laymen's literature on the subject has mainly been devoted to flowery reportage of spectacular visions, usually unsullied by the more unpleasant potentials of the drugs.

One exception is the French poet and painter Henri Michaux, who took mescaline and described it as a "miserable miracle." In a room of his Paris flat, Michaux took mescaline four times before recording the experience in book form, and reported that "for a complex man who has within him contradictory tendencies and urges, each experiment can be a severe test." Though none of his experiences with the drug were pleasant, the fourth time he took it he mistakenly gave himself a dose six times the amount that had transported him on the past occasions, and experienced a horribly magnified

nightmare. After seeing enormous vibrating lines, Michaux records that ". . . I WENT UNDER. The submergence was instantaneous. I closed my eyes to recover my visions, but, as I realized, it was no use, it was over. I had cut off that circuit. Lost at an amazing depth, I was no longer moving . . . several seconds elapsed. And, suddenly, the innumerable waves of the mescaline ocean came pouring over me and knocked me down. Kept knocking me down, knocking me down, knocking me down, knocking me down."

The great diversity of results with the drugs has led in recent years to a number of new terms to describe them. The label psychotomimetic was coined by those who found the drugs' basic result to be a mimicking of the psychoses, and this description obviously seemed inappropriate to other researchers who found the effects to be rewarding and beneficial to the user. Researchers who have found positive results from these substances have called them mysticomimetic (mimicking the mystic experience), transcendental, consciousness-expanding, psycholytic (mind-releasing) and psychedelic (mind-manifesting or mind-opening) and the latter label has stuck most permanently among the proponents of the drugs.

In the vanguard of the psychedelic school of researchers are Timothy Leary and Richard Alpert, two former Harvard psychologists whose experiments with psilocybin as a consciousness-expanding agent have stirred tremendous controversy. Timothy Leary, a Ph.D. in psychology who served as research director of the Kaiser Foundation before joining the Harvard faculty as a lecturer on social psychology, and Richard Alpert, formerly assistant director of Harvard's laboratory of Human Development, began their psilocybin research in 1960 with an experiment testing the effects of the drug on maximum-security prisoners at Concord prison. In addition to this formal project, which was carried out under the auspices of Harvard's Center for Research in Personality, Leary and Alpert conducted wide-ranging investigations of their own outside the university, and by the fall of 1962 had dispensed more than 3,500 doses of the drug to some 400 volunteers including doctors, artists, poets, ministers, writers, graduate students, and assorted intellectuals—as well as themselves. They reported that 73 percent of their subjects had a "very pleasant" experience under the drug and that 95 percent said it had "changed their lives for the better."

Leary and Alpert believe that one of the key factors to a

beneficial consciousness-expanding experience with psilocybin is the setting of the experiment, which for good results they say should be as relaxed, informal, and comfortable as possible, with trusted friends and beautiful surroundings—as far removed as possible from the "institutional" atmosphere. They arranged these settings for sessions in private apartments in Boston and New York, and did their best to provide similar surroundings for their prison subjects by hauling out candles, Oriental rugs, soft mattresses and LP records to Concord prison for the psilocybin sessions. Leary and Alpert turned out enthusiastic reports on these projects as they progressed, noting in an interim account of the prison study that "while it is premature to draw conclusions, the results so far look hopeful." The report said 36 prisoners had taken the drug, 20 of them had been on parole "an average of eight months," and only 25 percent had been sent back to prison instead of the usual recidivism rate of 50 percent. Psilocybin experiments were also conducted with graduate theology students, and Walter Houston Clark of the Andover Newton Theological School wrote that "many religious people who have participated in the Harvard psilocybin research have reported their spiritual sensitivities have been expanded." Leary found that while only 10 of his original psilocybin volunteers were orthodox religious believers, more than half used such terms as "God," "divine," and "deep religious experience" to describe their feelings under the drug.

But all aspects of the experiments were not so transcendent, and as Leary and Alpert's investigations expanded, criticism of their activities began to mount. The controversy broke out publicly at a meeting of the Center for Research in Personality in March of 1962, when the *Harvard Crimson* reported that "opponents of the psilocybin studies claimed that the program was run nonchalantly and irresponsibly and that alleged permanent injury to participants had been ignored or underestimated." Dr. Herbert G. Kelman, a lecturer on social psychology, said in the meeting that "I question whether this project is carried out primarily as an intellectual endeavor or whether it is being pursued as a new kind of experience to offer an answer to man's ills."

By the fall of 1962 the university decided that the still new and powerful drug was too dangerous for the kind of admittedly nonmedical experimentation that Leary and Alpert were

conducting; given their choice of continuing with either Harvard or hallucinogens, the two psychologists promptly chose the latter, and with private donations formed the International Federation for Internal Freedom to carry on their research. They offered membership in the organization for \$10, and explained in a recruiting letter that "The relationship of our project to Harvard has always been uneasy. We were enthusiastically introducing a powerful, nonverbal, meta-intellectual agent into a community which is fervently dedicated to words and intellectuality. We appreciated and sympathized with the academy's dilemma, and congenially separated when IFIF was formed in November 1962." Whatever congeniality existed was shattered, however, for although Leary and Alpert had planned to finish out the academic year, President Nathan M. Pusey publicly fired Dr. Alpert on May 27 when it was found that he had given psilocybin to a Harvard student in violation of an agreement with the university not to involve any undergraduates in the drug research. (Leary had been dropped from the faculty in the spring for failure to show up at an honors-program committee meeting, and says he will appeal his dismissal to the American Association of University Professors.)

Leary and Alpert got in a further expression of their own view of the academic troubles in a jointly authored article for the summer 1963 issue of the *Harvard Review* titled "The Politics of Consciousness Expansion" in which they wrote: "Social processes: The free expansive vision is molded into the institutional. Hardly has the institutional mortar set before there is a new cortical upheaval, and explosive, often ecstatic or prophetic revelation. The prophet is promptly jailed. A hundred years later his followers are jailing the next visionary. . . .

The university is the Establishment's apparatus for training consciousness-contractors. The intellectual ministry of defense."

Exiled from academica, Leary and Alpert have devoted their efforts to their new Internal Freedom Federation, which now has 3,000 members and offices in Boston, New York, and Los Angeles. The official IFIF position, unlike that of most other investigators of hallucinogens, is that the drugs are "basically educational (rather than medical) instruments." The Federation states that its basic purpose is "to work to increase the individual's knowledge and control of his own nervous system" and believes that everyone who wants to have an experience

with the psychedelic drugs should be able to do so. Dr. Walter M. Presnell, a psychiatrist who had participated in some of the psilocybin studies with Leary and Alpert, has resigned from IFIF, citing among his reasons for leaving the organization his belief that subjects should be screened for mental and physical ailments before being allowed to take the drug.

IFIF executive secretary Frank Ferguson, who gave up his graduate work in anthropology to devote full time to the Federation, elaborated on IFIF's goals by explaining that Eastern mystics had been able to gain control over their nervous systems after 20 or 30 years of study and discipline, but that "Now, with hallucinogens, there is no reason why we all can't be taught these Eastern skills in a matter of weeks." The long and arduous meditation of the mystics is not required for what Leary has described as "drug-induced *satori*" (the state of inner perception achieved in Zen Buddhism). This promise is of course tremendously appealing, and as Brandeis psychologist David F. Ricks commented in the *Harvard Review*, "People who have taken the drugs have hoped to find a quick and easy way to reach the kinds of inner experience that have in the past been available only to those who were willing to undergo the pain and work of falling in love, fasting and meditating, or learning to recall dreams and free-associate to them."

The partisans of IFIF believe that, as Ferguson put it, "In asking Tim and Dick to stop their research on psilocybin, Harvard was in effect asking them to stop experimenting with something as historically important as the wheel," and the Federation followers have done their best to keep such experimentation alive—even by carrying the research into their daily lives. In the fall of 1962, some of the organization's leaders began an utopian-living experiment that might best be described as a "transcendental boarding house" in Newton, Massachusetts.

IFIF also had sponsored a larger experiment in chemical utopianism at the Hotel Catalina in Zihuatanejo, Mexico, in the summer of 1962 with 35 adults and nine children carried on a program of "study, retreat, recreation, and experimentation in the expansion of consciousness." But the Federation's plans to carry on a year-round program there as an "experiment in transpersonal community living" were stymied last summer when lurid reports in the Mexican press led to the expulsion of the "LSD colonists" on the technical grounds of their having

engaged in unauthorized activities while visiting the country on tourist visas. Several of the IFIF leaders went afterward on a reconnaissance mission in the Caribbean to find a permanent home for their activities, and after failing to make satisfactory arrangements for the program on the British West Indian islands of Antigua and Dominique, they finally negotiated for eventual settlement on what Leary said was an "uninhabited island in the Caribbean where we will set up facilities for 60 people beginning in January of 1964."

Before their expulsion last summer from Zihuatanejo, Leary and pharmacologist Ralph Metzner and his wife had led psychedelic experiments with a group that included a stock-broker, banker, teacher, secretary, rabbi, pharmacist, editor, psychologist, actress and psychiatrist. The psychiatrist participating in the program, Dr. J. J. Downing, who has treated alcoholics at the San Mateo, California, General Hospital with LSD therapy, later evaluated the IFIF program in Zihuatanejo by saying that, "The atmosphere was highly unusual. People accepted one another without suspicion or anxiety. They seemed very open, very relaxed. . . . Six weeks is too short a period to measure any results. It must be regarded as a ruined experiment. My own view is that Leary and Alpert have developed techniques of potential value. But I do not agree with them that LSD should be available to all who want it. It is a potent, potentially dangerous drug, and should be used on an experimental basis only, by qualified researchers."

The question of who are "qualified researchers" has become increasingly controversial, and charges have been leveled at Leary and Alpert that their own use of the drugs has destroyed their objectivity as scientists. Dr. David C. McClelland, chairman of the Center for Research in Personality and the man who brought Leary and Alpert to Harvard, has said that the more they took the drug "the less they were interested in science." The *Archives of General Psychiatry* editorial warning against the dangers of the drugs noted that some researchers "who became enamored with their mystical hallucinatory state, eventually in their 'mystique' became disqualified as competent investigators." On the other hand, mushroom expert Gordon Wasson has pointed out that such charges against investigators who have taken the drug lead to the dilemma that "we are all divided into two classes: those who have taken the mushroom and are disqualified by our subjective experience and those who

have not taken the mushroom and are disqualified by their total ignorance of the subject."

Timothy Leary feels that the investigator's taking of the drug is in fact essential to a true understanding of the experience: "We are engaged in what is called a transactional research design," he said. "The researcher sees himself as part of the transaction, and is an active learner in the experiment. Most American psychology today is only a *description* of what the researcher sees—it is only the report of the researcher's experience in observing the subject, rather than what the subject is really experiencing. The subject-object method of research is inadequate for studies of human consciousness."

Leary feels that "People who take psychedelic drugs should take them with a trained 'guide,' " but that the guide does not necessarily have to be an M.D. "People who conduct psychedelic sessions have to be trained, just as an airplane pilot has to be trained—but you don't have to be an M.D. to fly an airplane, or to conduct a psychedelic session." One of the aims of IFIF is to train such "guides" for dispensing the drugs, and Leary has already prepared one of a series of "training manuals" for the experience. The manual explains that the "guide" is: "The ground control in LaGuardia Tower. Always there to receive messages and queries from high-flying aircraft. Always ready to help them navigate their course, to help them reach their destination. . . . The pilots have their own flight plan, their own goals, and ground control is there, ever waiting to be of service."

Leary admits that not all psychedelic flights end happily, though he feels that even a bad experience can be beneficial. He explains that, "Sometimes people having a bad experience get frantic and want to go to a hospital. We have had some people in New York go to Bellevue. What happens then depends on how the doctors treat the patient. If he feels himself to be psychotic and is *treated* as a psychotic he may continue that way. But now most of the hospitals in major cities—at least in New York, Boston and San Francisco—have had enough experience with people coming in under psychedelics to know how to treat them—give them some tranquilizers and dismiss them the next day."

Leary feels that the "training manuals" IFIF is preparing will help the psychedelic "guides" to prevent such hellish experiences, or draw the subject out of them. While working to

perfect these manuals for hallucinatory "flights" and "voyages," however, IFIF is at least temporarily prevented from sending people off on them. Leary explained that the organization plans to apply for permission from the Food and Drug Administration to obtain drugs for use in their research, but the extensive application will probably not be ready for filing before the end of this year. "At the present time," Leary said this past summer, "we are purely an educational organization." In the meantime, IFIF is gathering recruits; Leary believes the psychedelic drugs offer "the best road to happiness" and he is anxious to put more people on the road.

Whether or not techniques will be perfected to guide people into the desired state of consciousness under the drugs, at the present imperfect stage of experimentation the experience may lead to neither heaven nor hell but only a purgatorial state of little or no reaction at all. Dr. Robert DeRopp has observed that the people who are unaffected by mescaline are not—as might be assumed from some reports—"degraded types whose 'doors of perception' are so hopelessly muddled that even the cleansing action of mescaline makes no impression on the encrusting grime." Yet just as much of Western society is likely to regard experimenters with any kind of drug as dope fiends, the hip vanguard is equally likely to look down on all those who don't attain the artificial paradise as lacking in spiritual and intellectual endowments. Timothy Leary observed in one of his reports on the prisoners who took the drug that "a cultlike closeness and trust often developed." The cult of hallucinogenic experience has grown steadily over the past decade, especially among beats, hipsters, and assorted intellectual circles. Just as the teenage-gang kid may be tempted to move on to heroin for a bigger kick than marijuana, the intellectual pot smoker is apt to try to journey further out with mescaline, mushrooms, or LSD. For some of these people the hallucinogens have become a standard part of the paraphernalia of The Good Life. *Village Voice* columnist John Wilcock set forth the current components of that avantgarde version of the American Dream recently when he wrote that, "The year since I left *The New York Times* has been one of travel, freedom, writing, parties, girls, and discovery or rediscovery of jazz, Henry Miller, and such interesting things as mescaline, peyote and psilocybin. A life, in short, of enjoyment and involvement; almost pure hedonism."

But however negatively the hedonistic appeal of hallucinogens may be viewed, their nonmedical use in America today does not justify the fears of Weir Mitchell when he predicted in 1898 "a perilous reign of the mescal habit when this agent becomes attainable." The current popular interest in hallucinatory drugs has more the proportions of a fad than a perilous reign, and anthropologist J. S. Slotkin was probably right when he said "I do not think that most middle-class Americans would be interested in the effects of peyote."

A great many good middle classes would probably share the view of Marie Snyder of Wichita, Kansas, who wrote in complaint to *Life* magazine after it carried Gordon Wasson's description of the rites of hallucinatory mushrooms that, "Your description of the rites of hallucinatory mushrooms is an outrage to faithful Christians." But a significant minority report came in from Jane Ross of New York City, who informed the editors of *Life* that far-out visions were not restricted to the far-off mountains of Mexico:

Sirs: I've been having hallucinatory visions accompanied by space suspension and time destruction in my New York apartment for the past three years.

The essential difference between Mr. Wasson's visions and my own are that mine are produced by eating American-grown peyote cactus plants... .

I got my peyote from a company in Texas which makes C.O.D. shipments all over the country for \$8 per 100 "buttons." It usually takes about four "buttons" for one person to have visions.

There is no way to know how many people in addition to Miss Ross have suspended space and destroyed time in the comfort of their own apartments by sending mail orders to Texas, but the business in peyote buttons has at least been large enough for one Texas "floral" company to open a cacti department and go to the trouble of giving its customers peyote "recipes" along with their shipments. This may be a unique service, for even Betty Crocker doesn't provide such culinary instruction as the following from the cacti department:

Boil eight buttons about 1 hour, pouring off the water and replacing with fresh water. Keep the poured off water in the jug. After boiling, throw away the buttons, put the peyote water back into the pot, and boil until there is as little as $\frac{1}{2}$ tsp. left. It is

easier to use a Waring blender and a pressure cooker if you have them. . . .

Visionary chefs still order peyote buttons through the mail from various "floral" companies in the Southwest, though peyote has been outlawed in some states, including Massachusetts and California. Peyote is classed as "habit-forming" in the Federal Food, Drug and Cosmetic Act—despite most medical evidence to the contrary—and shipments that do not carry this warning can be confiscated by the Government.

The hallucinogens are not addicting, and none of them are included in the Federal Narcotics Act. Though they fall under the jurisdiction of the Federal Food and Drug Administration, their legal status is cloudy at best and the procurement of them is full of contradictions and confusion. They are classed as "new drugs," available only to "qualified" investigators—though exactly who is qualified is not defined. Several years ago a group of Harvard undergraduates who wrote to drug companies asking for mescaline, honestly filled out a Food and Drug Administration form sent by one of the firms, and received the drug. In some places, ordinary citizens have been able to buy hallucinogenic drugs simply by going to the corner drugstore and ordering them. General ignorance about the new drugs apparently facilitates their purchase until their use becomes widespread enough in a particular place to attract unfavorable attention.

When reports of experiments with vision-producing LSD at the Psychiatric Institute of Beverly Hills got around Hollywood several years ago there was a run on the drug by local people and a crackdown ensued. Several movie notables were among the volunteer subjects of medical experiments in Beverly Hills with LSD, though the doctors in charge of the project refused to reveal their names. But Cary Grant, after taking LSD in therapy with his psychiatrist, reported his experience and said, in what the press described as a "confessional lecture" at UCLA, that, "I was a self-centered boor. I was masochistic and only thought I was happy. When I woke up and said 'There must be something wrong with me,' I grew up." Grant later elaborated to a reporter that the LSD experience had helped him grow up "because I never understood myself. How could I have hoped to understand anyone else? That's why I say that now I can truly give a woman love for the first time in my life,

because I can understand her." Some years later Grant's third wife, Betsy Drake, added an unhappy ending to these revelations when she filed for divorce.

Some visionaries have been able to buy mescaline with a doctor's prescription (one bill written several years ago on the stationery of a New York pharmacy showed 10 capsules of mescaline sulfate sold for \$45) and some were able to get mescaline and other hallucinogenic drugs through academic and medical experiments. The most popular method of supply until recently was simply sending off to chemical companies in Europe, some of which sent back the drugs accompanied by a mimeographed warning about their potency. Since last winter, however, unhappy amateurs report getting nothing but "rejection slips" from the European drug houses that once shipped them hallucinogens almost as casually as aspirin.

The increase in the nonmedical use of the drugs led to a tightening of restrictions in October 1962 by the Federal Food and Drug Administration, and has apparently resulted in greater caution on the part of medical manufacturers. Sandoz Laboratories, which manufactures psilocybin, is now only supplying it to researchers whose work is carried on under Federal Government grants. But the general confusion promises to grow as more interest is aroused in these substances. An unforeseen complication was recently added by the discovery that the seeds of several types of morning-glories—appropriately named "Heavenly Blue" and "Pearly Gates"—produced hallucinogenic effects and an unseasonal demand for them was reported by perplexed seed stores in Boston, New York, and San Francisco. According to reports, 200 to 500 seeds ingested resulted in effects similar to those of a high dose of LSD, lasting five to eight hours. It was reported that the FDA might go to Congress to ask for amendments to the narcotics law barring morning-glories: as *The New York Times* explained, "Morning-glories may join marijuana as a back-yard flora *non grata*."

The knotty aspects of the morning-glory problem were illustrated by a brief, unofficial exchange on the subject between an FDA representative and a hallucinogenic enthusiast attempting to ascertain the possibilities of the situation.

"If I have a lot of morning-glory seeds," the citizen asked, "how do you know I don't simply intend to plant them and grow morning-glories?"

"Well," the FDA man said, "if you did that, it would be all right because the morning-glories wouldn't be a drug."

"But what if I ate them and had a hallucinogenic experience?"

"Then they would be a drug."

"So the same seeds are either a drug or not depending on what I do with them."

"Up until the time you would take them, they would not be a drug; after you take them, they're a drug."

While these seemingly metaphysical problems are being worked out, a black market in hallucinogens is growing. The most popular product is a lump of sugar containing LSD, psilocybin or mescaline that sells for a dollar, and reportedly these have been purchased in New York, San Diego, and Cambridge. The summer 1963 issue of the *Harvard Review* stated that the sugar-lump business that sprang up a year before had grown to include other products: "This year mescaline and psilocybin may both be had, though at prices well above their value in legal trade. A large black market in the drugs has sprung up, particularly in university communities." Dr. Dana L. Farnsworth, director of Harvard University Health Services, and Dean John U. Monro of Harvard College, have alerted students to the dangers of mind-distorting drugs and warned that ingestion of such substances as LSD, mescaline and psilocybin "may result in serious hazard to the mental health and stability even of apparently normal persons. The drugs have been known to intensify seriously a tendency toward depression and to produce other dangerous psychotic effects."

Many people who have found an artificial paradise in the hallucinogens are anxious to continue their chemical pilgrimages, even if it means buying them through the new hallucinatory black market. The IFIF people say they will fight to make the drugs available on the open market to all who want them, arguing that the internal freedom some people find through the drug is a personal and not a governmental matter.

A number of writers and artists have experimented with their work while under the influence of hallucinogens, and medical studies have been made in an attempt to determine whether the drugs really have the power sometimes claimed for them of stimulating the creative process. Perhaps one of the most interesting pieces of narrative produced under the

influence of hallucinatory drugs is the following stream-of-consciousness passage:

Doctor, where have you been? I'm Alabama bound! I'm carbamino bound. I suggested that to Bruce to use it in the show. Bruce-*Brust*. That's breast in German. Yeah. Bard Hall. Bard Hall. Leon M. Bard. Loeb. Loeb. Kuhn-Loeb. I was at the Jewish museum yesterday and all those people had medallions. Jones of microbiology used to say "No levity in the autopsy room." I love to play tennis. Tennis. Tennis. Six love, love six. I love you.

Though this passage might well have been found in any number of post-Joycean novels, it was actually transcribed from the monologue of a medical student participating in an experiment with psilocybin. The possibilities thus opened to avant-garde novelists by the use of a tape recorder and a bottle of psilocybin pills seems enormous, but all this may not be a true gauge of the worth of drugs for conscious creative activity. The possibilities of becoming a Matisse by means of mescaline, for instance, seem rather slight, on the evidence of two medical studies reporting the effects of hallucinogens on painters. One medical study of a single painter's work under LSD concluded that the pictures he produced with the aid of the drug "do not contain any new elements in the creative sense, *but reflect psychopathological manifestations* of the type observed in schizophrenia." (Italics in text.) Another study of the work of four artists while intoxicated with mescaline, and, at another time with LSD, found that though the works were judged by other artists to have "greater aesthetic value" than work produced by the same men without the drugs, "the benefits derived . . . were offset by the difficulties these subjects had in mobilizing their perceptions and energies in the pursuit of creative art." While under the drug, three of the artists "reported that they did not want to concentrate on their work, but only wanted to look and feel. . . ."

Creative work is not the only activity of the ordinary world that people are likely to lose interest in while under the influence of hallucinating drugs. Some people transported by hallucinogens find that even such a highly fascinating human activity as sex seems to be too much trouble to bother with. Medical studies in fact have reported that hallucinogens possess aphrodisiac qualities—but this may be due to the anti-sexual atmosphere of the hospital setting where such studies were con-

ducted rather than to an actual property of the drug. A number of free-lance experimenters have reported on sexual pleasures while using the drug, and one connoisseur explained that, "While these drugs are not actually aphrodisiacs—that is they don't specifically stimulate the user to sexual activity—a good experience with the drugs heightens and intensifies *all* experience, and just as one can enjoy music and art during the experience with a new and deeper appreciation, so one can do the same with sex—it can be a beautiful experience under the drug." Such an experience, the connoisseur explained, of course takes place when the parties involved are attuned and desirous of the experience, and quite disturbing scenes have arisen from attempts at secret seduction by such drug doses on an unsuspecting female: "She doesn't know what's happening, and is likely to go screaming out into the street." David Ricks, a psychologist at Brandeis University, noted in the *Harvard Review* that, "I know from direct reports that the drugs have at times been used as consciousness-suspending aids to seductions and other manipulations of an extremely messy sort."

According to unpublished material from the now-defunct Harvard Psilocybin Project, "Objective data about sexual reactivity" to the drugs "is classically difficult to obtain." While acknowledging that, "The early studies from psychological laboratories and psychiatric clinics reported that psychedelic drugs were not aphrodisiac," the study maintains, "More recently, evidence obtained from more than 25 married couples taking psilocybin or LSD in their homes seems to indicate that psychedelic substances can provide extraordinary intensification and broadening of all types of sensory experience, including the sexual.

"There are many factors involved among which some of the most important are release from neurotic blocks which enable the person to achieve healthy, mature sexual responses, and profound feelings of interpersonal communion and unity which endow every action with beauty and significance. The increased sensitivity and awareness not only enhances the pleasurable aspects of sexual experience but also makes only too evident any manipulatory or crude seductive action on the part of any individual in the session.

"The expansion of the subjective time sense is another factor contributing to the intensity of the experience." The study

establishes that subjects regularly report that one moment of clock time in an LSD session can be an eternity of ecstasy, and that: "There is a complex relation between dosage and the type of experience. With low dosages (less than 100 gamma LSD), subjects report interpersonal intimacy and heightened genital responsiveness. With higher dosages, new forms of sexual experience are reported. These involve awareness of more basic forms of biological processes. Subjects tend to use such extravagant-sounding phrases as 'cellular organism,' 'pulsating energy patterns,' 'internal fire flow,' 'melting and flowing of the entire body,' etc., in their descriptions of these experiences. These reports, interestingly enough, are quite similar to the accounts given by adepts of Kundalini Yoga and certain forms of Tantrism."

Again, as with most other aspects of the drugs, both hellish and heavenly experiences can result in sex as well as other activities. Depending on the setting and the intent of the users, communal consumption of the drug might result in love-making, or in what Havelock Ellis described as an "orgy of vision" rather than sex. A hallucinogen party will not, by definition, look like a scene from *La Dolce Vita* but may, to an unhallucinated observer, bear more resemblance to an especially slow-moving Beckett play. At one of these informal rites held recently in a New York apartment, an intellectual medicine man passed out the sacred mushrooms, in the form of psilocybin pills, to five volunteer consumers, including two writers and one former alcoholic. The experimenter dispensing the pills was a firm believer in the all-round curative powers of the mushroom drug, and enthusiastically explained to the uninitiated visitor that the alcoholic had been taking the pills all weekend (it was Sunday night) and hadn't had any desire to drink, while one of the writers who had been under the influence of the mushrooms for the same period had not once shown his usual hostility. In addition to these excellent psychological effects, the dispenser said the pills were also good for creativity, and, perhaps to illustrate this aspect of the drug, he fed one of the writers additional pills and handed him a pencil and paper. The writer leaned forward groggy, pulled up a chair, and placed the piece of paper on it. Dispenser and visitor looked on expectantly, and after several minutes of intense concentration, the writer bore down with the pencil and drew a series of straight lines across the paper; then, after

studying his work, he turned the paper around and drew another series of lines across the lines he had already made. He handed this creation to the dispenser, who looked at it, laughed rather nervously, and went in to give more pills to the others. After a while two of the mush roomers lay down on mattresses on the floor (separate mattresses) and three others sat leaning on the kitchen table, listening to a jazz record. One of the men at the table turned to the fellow next to him and said, "Man, you know what this is like?" The second man asked "What?" and the first one said, "It's like being on a rocket ship." The second man drowsily pondered this thought and said "Yeah, that's what it's like." The two men did not appear to the visitor as if they were on a rocket ship, and he smiled. A girl at the table saw the smile and said: "You've just had a breakthrough!"

A number of people claim to have indeed gained profound and soul-soothing "break-throughs" with the aid of the hallucinatory drugs, and feel that the artificial paradise is the best one—perhaps the only one—available to mortals.

Of course the products of the chemical revolution might be used for fiendish as well as divine purposes—already the powers of the hallucinogens are being investigated for their potential as a weapon of war. The Army Chemical Corps has studied LSD along with other drugs that upset the normal functioning of the brain and they are therefore put in the military category of "incapacitating drugs." It has been reported that a pound of LSD dropped into a city's water supply could produce a psychosis of the population that would last long enough for enemy troops to take over—though there might be bizarre and unforeseen problems involved in the invasion of a city of schizophrenics. On an individual cloak-and-dagger level, there is always the possibility of putting one of those LSD sugar lumps into the ambassador's espresso and watching him writhe with psychotic visions (perhaps re-enacting some childhood trauma) at some crucial historic moment.

But the dangers of a chemical heaven still seem a greater problem—perhaps even a greater threat—to the future than the dangers of a chemical hell. There are those, after all, who agree with Dostoevsky that a life of complete satisfaction would be an intolerable bore. But perhaps when the chemical millennium arrives there will be a way to purchase certain black-market pills that will produce just a little bit of tension.

Such drugs will have to be bought under the counter, authorities will crack down on the illicit traffic, poets will pen hymns to the invigorating effects of pill-produced tension, civil libertarians will protest the Government's right to ban the drug, and those who really want it will somehow or other be able to get it—perhaps by sending off to a mail-order house in Texas or even by swallowing the seeds of some seemingly innocuous vine growing in their own back yards.

4. A VISIT TO INNER SPACE

ALAN HARRINGTON

In April I had my first experience with one of the consciousness-expanding substances—or as most physicians prefer to call them, in their extracted forms, "hallucinogenic drugs." A twelve-hour session under the influence of the mind-dilating compound LSD-25 dispatched me on a trip through the cosmos inside my head. LSD enables everyone to become an astronaut of himself. During this flight beyond time into the depths of consciousness, to what must be the memory source of humanity, each of us can explore an inward universe filled with both violent and peaceful revelations.

I am no pioneer. Thousands of people have been research subjects before me; have ingested LSD, psilocybin and mescaline, not to mention raw mushrooms and cactus buttons, and they have had similar visions and psychic shocks. Many of them hadn't much choice. They were mental patients. But there have also been seers, poets, film stars, and assorted anthropologists, prisoners, priests, ministers, graduate students and housewives.

Mr. Aldous Huxley built a philosophical structure out of the mescaline experience. More than a quarter century ago an extract from the cactus button dilated the imagination of Havelock Ellis, giving him a fine show of jewels, flowers and butterflies. Gerald Heard and Robert Graves have informed us of other visions. The list may be extended. (They all seem to be Englishmen.) Cary Grant has testified that LSD changed his life. In *The Joyous Cosmology*, "Adventures in the Chemistry of Consciousness" (Pantheon, 1962), Alan W. Watts gives a poetic and precise description of what it feels like to be inside LSD.

I find the accounts of these and other witnesses intimidatingly beautiful. They are decorated with elevated perceptions and high philosophy. The voyages seem considerably more splendid than mine. Gorgeous flowers and jewels, knights in armor and Moorish castles must not be intended for everyone, at least not during the first session. According to Gerald Heard, the greater the ego the more severe will be the period of terror under LSD. Before the sublime moments can come the ego must give up and, willingly or not, break apart. For those who resist this process, the temporary "dying" can be a hellish passage. It was that way for me—I must have been so concerned with hanging onto ego that I missed a great deal of the beauty. (But once the dying was over with I ascended to the top of the universe like everybody else.)

I would like to report my experience in some detail—not for the reason that it will be filled with brighter colors than any other, but because most accounts of the LSD voyage strike me as being either circumspect or rarefied, and even evasive. The writers don't seem to be telling what happened to them really. They just soar away on their beautiful new wings. Their memories read like an old Fitzpatrick travelogue, with the sun sinking in the west among lovely islands. Inner space isn't like that. It is a glorious but sometimes frightening continuum, and has a madhouse quality, a little like *Alice in Wonderland*.

Why was the experience so rewarding? For one thing, the tour through the hell of ego was like a quick psychoanalysis. The subsequent ascension provided an atheist with what can be described as a religious or anyway metaphysical insight, and this has not dimmed. To one who has practically never thought in terms of lotuses, reincarnation, stages of existence, etc., and who through the years has been irritated by the enthusiasts of Eastern philosophy, the LSD journey brought evidence of recurring personal death and rebirth. It made possible a vision of eternity not unlike those of Blake and Swedenborg.

The subject had forced out of him prolonged "cosmic laughter" that turned into a jag of cosmic grief. He burst out with wholly unexpected confessions. It seemed to him that the walls of consciousness were opened by an enormous force, and the force thrust him out of time. He went out of himself and became instead a representative of the human race. He relived the history of the species, and only incidentally of himself,

crying out, groping and crawling before he was able to stand erect and think again. When he came back down to the present, and the do-it-yourself brainwashing was over, he felt clean and marvelously refreshed.

Afterward I imagined psychoanalysts as diligent little men with shovels working away, along with the patient and his shovel, at a mountain of neurosis—and in comparison LSD could be an engineered atomic force lifting off the mountain exposing the caves not of one's private childhood but the childhood from which everyone springs.

Seventy-two hours after the night voyage, the emotional effect begins to fade. But details of the experience remain clear. Things seen by one's dilated eyes and the mind's eye will not be forgotten. Some of the more intellectual insights remain, too. I am speaking here of only one session—the initial, shocking one. You may be able to take off on other, much more easy, inward journeys. Unlike the first trip, these can be "programmed" to orbit you around a given life problem.

A single LSD session will not be likely to produce a great and lasting change in one's life. But it shows the way to change. My first experience opened up paths of thinking that I never knew existed. I know that the vision revealed by psycho-chemicals can help overcome feelings of alienation and loneliness; it can make death appear somewhat less fearful. The common vision of immortality, revealed in one way or another to most people under LSD, indicates the possibility of my survival in some form, my ever-returning to life. (According to the tenets of Eastern Philosophy, recurring survival is not a good thing, but I like it.)

A quick history of the materials we are talking about: Magic use of the raw substances that produce sublime or terrifying visions and the feeling of drifting beyond time can be traced back for many hundreds of years. The materials from which today's drugs have been extracted are cactus buttons, mushrooms and ergot fungus.

Mescaline was derived nearly seventy years ago from the peyotl cactus that grows in Mexico and our Southwest. With stronger hallucinogenic agents available, it has been left pretty much to the Indians who continue to use peyote in their religious ceremonies. The use of peyote is illegal in California, although the prohibition is being challenged in the courts. By

treaty the U.S. Government permits Indians to have peyote on hand for religious purposes, and the cactus button may legally be sent through the mails. But if you are not an Indian the law forbids you to chew such buttons.

A mushroom used in the ceremonies of the Mazatecs Indians in Mexico yielded the active ingredient in *psilocybin*. This agent was synthesized in 1958 by Dr. Albert Hofmann, director of biochemical research for the Swiss pharmaceutical firm of Sandoz A.G. in Basel. The vision-producing mushroom had been brought out of Mexico in 1956 by R. Gordon Wasson, a vice president of the Morgan Guaranty Trust Company of New York, and Dr. Roger Jean Heim, director of the National Museum of Natural History in Paris.

Dr. Hofmann had in 1938 accidentally unlocked the extraordinary powers of the agent now known as *LSD-25*. Experimenting with a new ergot compound, d-lysergic acid diethylamide tartrate, he began to feel dizzy. He stumbled home from his laboratory, feeling that he was about to go mad. He was possessed with fantasies; he ascended out of time, saw himself as another person, and observed wild colors in a world without stability or form. Recovering from this assault on his senses, Dr. Hofmann continued his experiments, synthesizing LSD in 1943.

In a three-part study of hallucinogens last March, the newspaper *Medical Tribune* noted that LSD is ten times stronger than psilocybin and 100 times more potent than mescaline. A standard dosage (the one I received was 350 micrograms) can alter a subject's consciousness for ten to twelve hours. LSD and psilocybin are licensed by the U.S. Food and Drug Administration for research purposes only. (At present, pending the FDA's announcement of definite regulations, their use is confined to scientists receiving federal or state grants.) Sandoz Pharmaceuticals, through its subsidiary in Hanover, N.J., has been the sole licensed distributor of the two drugs in the United States.

What one participant describes as a "power struggle over the control of human consciousness" has built up this year around the question of who will be permitted to administer LSD and for what purpose. The struggle at this time relates genuinely to principle. There are no villains involved; two opposed *views of life* have gone into combat.

One may be called the traditional scientific perspective. It is maintained by most psychiatrists and other medical doctors who have employed LSD and psilocybin as "laboratory tools" in the treatment of mental illness. They believe that the two hallucinogens serve as useful aids in psychiatric research or in a regular program of therapy. For them the compounds are *medical* materials only, to be administered—preferably in a hospital environment—under the authority of a physician or highly qualified clinical personnel. Their conviction is that drugs of this sort are much too powerful and dangerous to be administered under any other than the strictest professional supervision. They stress that the substances create effects in the mind that remain mysterious and incalculable. Although no important physical ill effects have been attributed to LSD or psilocybin, not enough evidence is in, the doctors say, to permit their harmlessness to be lightly assumed.

The second approach to these substances is championed by the group of clinical psychologists who until early this year conducted studies with psilocybin at Harvard's Center for Research in Personality. Members of this group consider LSD and psilocybin to be *educational* materials. In a foreword to Watts' *The Joyous Cosmology*, the directors of the Harvard research project, Doctors Timothy Leary and Richard Alpert (Ph.D.'s, not physicians) put the question:

What are these substances? Medicines or drugs or sacramental foods? It is easier to say what they are not. They are not narcotics, nor intoxicants, nor energizers, nor anaesthetics, nor tranquilizers. They are, rather, biochemical keys which unlock experiences shatteringly new to most Westerners.

The experiences unlocked by the Leary-Alpert psilocybin study group were also new to Harvard, and the methods used to help bring them out strange and disturbing to the academy. Over a two-year period Leary and Alpert antagonized almost every unit of authority whose support might have been helpful to them: the university administration, the dean's office, colleagues in the Department of Social Relations, members of the faculty at the Harvard Medical School, the majority of clinical psychologists around the country, in other words (and this is not said disparagingly), the academic and medical Establishments.

At the end of 1962 the university served notice that the

Psilocybin Project would be discontinued. Timothy Leary who was directing the project on a continuing basis, without tenure, was left with nowhere to go, so far as Harvard Yard was concerned. Richard Alpert went on teaching at the School of Education where he had an appointment as Assistant Professor in Child Psychology. But last May Harvard announced that he was dismissed from the faculty, ostensibly for having violated an agreement not to use undergraduates as experimental subjects. In explaining what had happened to Timothy Leary, Harvard's president, Dr. Nathan Pusey, said that the senior director of the project was also dismissed because he had not returned for the winter and spring semester of 1963. Leary in rebuttal has pointed out that he had no assignment to return to—but we will bypass this awkward affair for the moment, in order to fill in some details that will make it understandable.

Evidently anticipating that their activities at Harvard would be curtailed in some manner, members of the Leary-Alpert group formed a nonprofit organization in November of last year. This transcendental enterprise, the International Federation for Internal Freedom (IFIF), has its headquarters in Cambridge. Its aim is to establish small study groups outside of the academy—"assemblages of six to ten persons who share the general goal of consciousness exploration and who are involved in a common research project." * Timothy Leary is president of the corporation, which lists Alan Watts as Honorary Director.

IFIF has a twenty-two-month lease on the Hotel Catalina in Zihuatanejo, Mexico, a fishing village up the coast from Acapulco, which it operates as "a center for study, retreat, recreation, and experimentation into the expansion of consciousness." Membership in IFIF entitles visitors to stay at the hotel for \$200 a month board and room with half rates

* From a statement of IFIF's Program, April 1963: "A main function of IFIF is to establish corporate responsibility for the purchase and distribution of consciousness-expanding chemicals. . . . Materials will be available to IFIF research groups in strict compliance with state laws, and will not be sold individually; only research groups acting cooperatively may purchase. IFIF officials have conferred with Federal and Massachusetts Food and Drug Administration representatives, and we are keeping all agencies informed as to the details of our activities. Groups wishing to affiliate with IFIF and to receive materials under our sponsorship will be sent F.D.A. application forms upon request."

for children. They may take part in "a systematic program of seminars and sessions. But most significant is the experiment in transcendental community living. New social forms and educational methods based on Huxley's Utopian writings and visionary insights will be developed."

My connection with LSD was made through clinical psychologists sympathetic to the IFIF group; that is, after obtaining medical approval I volunteered as a research subject. I too find myself in sympathy with the approach of Leary, Alpert and Alan Watts to the uses of the materials that dilate consciousness. I think that in a public relations sense they have been given a bad deal by the university authorities, and have had in general a silly press. One has the impression that in going out of their way to discredit Leary and Alpert leaders of various establishments feel, perhaps not quite knowing why, that the two clinical psychologists are dangerous fellows, and that they should be put in their place by the strongest possible measures. I can understand this feeling.

In my opinion, the IFIF people are social revolutionaries with a religious base using these extraordinary new drugs as both sacramental material and power medicine. I think they hope to establish a Good Society in the United States and eventually in all lands by establishing cells of good will in our cities and towns. These cells of good will are to be arranged around the substances that give all concerned regular views of eternity. Views of eternity, and the shattering of ego, achieved under LSD and psilocybin (still leaving peyote to the Indians), will, according to IFIF principles, enable you and me to face the nervous-making games of everyday living and deal with them more effectively—by recognizing them as mere games. It may seem ridiculous to take the fledgling group so seriously, but Christ and Hitler started small; all revolutionaries meet initially in ridiculous barns and barrooms. So what is especially minor league about a hotel on the Mexican coast that sleeps forty?

I believe that my LSD experience and yours, to have any meaning beyond therapy or titillation, must be considered within the framework of the game-philosophy articulated by Timothy Leary. I am not by any means an all-out partisan of IFIF, but approve of what these hip zealots think they are trying to do. But partisanship must have ground rules. My reser-

vations concern the possible physical effects of LSD and psilocybin, especially when they are taken quite often.

When Timothy Leary declares in a paper on creative experience:

Here let it suffice to say that the drugs are physically safe, psychologically harmless (unless in irresponsible hands, and even then the residuals are negligible and debatable) . . . ,

I hope he knows exactly what he is talking about.

When Alan Watts writes:

The grounds for any possible suppression of these medicines are almost entirely superstitious. There is no evidence for their being as deleterious as alcohol or tobacco, nor, indeed, for their being harmful in any way except when used in improper circumstances or, perhaps, with psychotic subjects. They are considerably less dangerous than many of the contents of the family medicine cupboard . . . ,

I am not quite convinced, even though this great teacher tells me so, because finally you have to wait for what the medical men say. Even though—in their philosophical approach to the drugs—many of them may seem dismally square, like timid old men approaching a young bride, while Leary, Alpert and company are swashbucklers with style, the doctors may give us something to think about before the LSD game has gone much farther. After all, we are not supposed to ingest LSD more often than once a week for the reason that the flow of enzymes must not be interfered with too frequently. (This interruption is apparently what creates the hallucinatory effects we experience.)

Of course, we can imagine, say, an early discovery of aspirin exclaiming: "It won't hurt you! Take as many of the pills as you like," and being proven wrong. But this wouldn't mean that aspirin was no good. The trouble would simply be in the dosage. If by some chance the materials we are concerned with turn out to have side effects we don't yet know about, such effects might be controlled by limiting the dosage. It may be objected that these are nothing but speculations. Still, the doctor's job is to speculate about possible side effects over a period of years before he can love a new substance unreservedly. And if doctors think Timothy Leary and his colleagues are

cavalier in this respect, their reaction is not difficult to understand.

We are not surprised when Dr. Theodore Rothman, Clinical Professor of Psychiatry at the University of Southern California School of Medicine, speaking at a panel discussion December 1, 1962, before the Los Angeles Society of Clinical Psychologists, takes off on Timothy Leary in this fashion:*

Such wild statements and conjectures as those made by Dr. Leary . . . can have serious social consequences for the gullible. I must emphasize the enormous harm that his beliefs can do to persons unwary of the nature of psychotomimetic drugs. To me consciousness expansion is a meaningless abstraction, a metaphor without a physiological home. . . . I protest impairing the intact human brain with chemicals in order to disorganize the nervous system, resulting in psychopathological states that may be irreversible. . . .

What kind of thinking brought forth such an attack? Well, here is an excerpt from Timothy Leary's talk before the Fourteenth International Congress of Applied Psychology at Copenhagen, August 1961:

All behavior involves learned games. . . . Only that rare Westerner we call "mystic" or who has had a visionary experience sees clearly the game structure of behavior. Failure to understand its [game] nature leads to confusion and eventually to helplessness. . . . Cultural learning has imposed a few pitifully small programs on the cortex [which] activate perhaps one-tenth or one-hundredth of the potential neural connections. The consciousness-expanding drugs unplug these narrow programs. They unplug the ego, the game machinery, and the mind—that cluster of game concepts.

Leary could also testify more prosaically that of the more than 400 subjects studied by the Harvard Psilocybin Projects not one had suffered bad effects: "There have been no physical or psychological 'casualties.'"

The two groups in conflict over the uses of LSD and psilocybin couldn't be much farther apart, even in the language they employ. For example, a more or less orthodox psychiatric view has been that the drugs create an instructive "model psychosis."

* From *Medical Tribune*, March 15, 1963: "Report on Hallucinogens II," second of a three-part story.

In his *Life* article on "The Chemical Mind-Changers," Robert Coughlan reports:

By studying the model, scientists may learn much about the chemistry of spontaneous mental disorders and thus learn how to cure them . . . [LSD] increases the patient's ability to communicate and also increases his suggestibility, thus making him more receptive to the psychiatrist's guidance.

But the IFIF clinical psychologists question the whole idea of a doctor-patient relationship. They agree that the materials can be applied in an effective manner to the process we know as psychotherapy. At the same time they believe that the doctor's conventional detachment from the subject's trauma is a deterrent to understanding. A psychiatrist sitting off to one side taking notes, and placing himself in cool authority outside of the LSD experience, will almost surely fail to understand what is going on, the IFIF people insist.

From my own experience, I would say that they are right. The *self* of a human being is undergoing fragmentation and then rebirth before the observer's eyes. A laughing, crying, occasionally gibbering, possibly rolling-on-the-floor, exclaiming in-wonder, confessing-and-loving creature, a throwback to God knows what—he may be seeing Existence Itself as an unbearable comedy, an enormous play of grief or, at another point in his voyage, a situation of dooming terror. He is seeing things from a point of view that a cool observer cannot possibly share. Doctors Leary and Alpert stress that in many instances a cold, orthodox psychiatrist may be the worst possible individual to place in charge of an LSD session. A warm and supportive "set and setting" will always be the key to a rewarding experience.

Alan Watts says:

It is a sound general rule that there should always be present some qualified supervisor to provide a point of contact with "reality" as it is socially defined. Ideally the "qualified supervisor" should be a psychiatrist or clinical psychologist who has himself experienced the effects of the drug, though I have observed that many who are technically qualified have a frightened awe of unusual states of consciousness which is apt to communicate itself, to the detriment of the experience, to those under their care.

Most doctors obviously don't care to muck about with LSD: that is, on the receiving end. Note taking suffices for them. On

a TV "Open End" panel discussion in May, Richard Alpert represented IFIF's point of view. Alan Watts also took part in the program. Dr. John Beresford, who served as the organization's medical consultant in the New York area, held to a more conservative position than these two. A physician with an independent practice, he is more concerned than his associates with establishing a traditionally clinical atmosphere for research in consciousness. Even so, he has taken LSD and understands the shared experience. In contrast, other doctors on the panel—all supposedly experts on administering LSD and gauging its results—acknowledged that they had never thought it necessary to undergo the authority-cracking experience themselves.

The IFIF argument is that LSD and psilocybin should be administered not with authority but in the spirit of brotherhood. Medical authority aims at bringing back mentally ill people to the world we know. IFIF psychologists think that mental illness is one more, perhaps aggravated, form of spiritual helplessness that we can detect everywhere around us (and often within ourselves). They believe that society is also a patient, humanity itself the patient today, and that therefore psychiatrists are just as much patients as the subjects they are treating. Hence, spiritually, we are all in this together. Technology which *produces* feelings of helplessness and alienation cannot, in its psychiatric form, efficiently treat such symptoms unless it does so with humility, unless the doctor relinquishes his authority and gets down in the pit with distressed and nervous people (which the doctors *themselves* sometimes are), sharing instead of distantly observing the dilated state of mind.

Authority has had its run, and now is the time for a frightening democracy of love—which can be brought on and intensified by the LSD hours. So runs the IFIF line of thought.

Gigantic misunderstandings afflict any discussion between the two groups. For example, *Medical Tribune* says that psychiatrists in general do not feel that LSD is addictive. But "psychiatrists do fear . . . the psychotic reactions and acting-out behavior that they believe are associated with the [hallucinogenic] drugs." But Timothy Leary *advocates* this sort of acting out. Here he is, off the cuff, in his Copenhagen talk:

There are many methods for expanding consciousness beyond the game limits. . . . Have a psychotic episode. . . . Or expose yourself to some great trauma that shatters the gamesmanship out of you. Birth by ordeal is a well-documented phenomena. The concentra-

tion camp experience has done this for some of our wisest men. Physical traumas can do it. Electric shock. Extreme fatigue. . . . Or separate yourself from the game-pressure by institutional withdrawal. Live for a while in a monastic cell. Or marry a Russian. . . .

Is this a man to be watched or not? No wonder that at a tense and angry faculty meeting a year ago last March, involving staff members of Harvard's Department of Social Relations, an opposing lecturer said of the Leary-Alpert group: "Their program has an anti-intellectual atmosphere. Its emphasis is on pure experience, not on verbalized findings. It is an attempt to reject most of what the psychologist tries to do."

And if the gentleman is interested, Timothy Leary has some words for him: "This drug is a kind of cure for intellectualism, a remedy for minds hung up in categories. We feel like a medical team in a plague area. We want to make studies, but the epidemic is raging, and everybody lines up for treatment."

"What is the plague?"

"Abstract intellectualism. People instinctively reaching for categories."

Richard Alpert, 32, Boston, Mass. Father: George Alpert, former president of the New Haven Railroad, a founder of Brandeis University. Uncle: Mickey Alpert, famed Boston orchestra leader, often at the Coconut Grove, survived the catastrophic fire that burned down that club. Dick attended Tufts, Wesleyan and Stanford, obtaining his Ph.D. from the latter university. Achieved lifelong ambition, joining Harvard faculty. Reaction to the drugs, controversy and dismissal from Harvard.

Timothy Leary, 43, Springfield, Mass. Only son of Roman Catholic parents. After graduation from high school, appointed to the U.S. Military Academy. Not cut out to be a cadet, left West Point in his plebe year. In the army as an enlisted man during World War II, suffered an injury on the firing range that left him partially deaf. He now wears a white plastic hearing aid. Took his B.A. in 1945, University of Alabama; M.S., Washington State University, 1946; Ph.D., University of California, 1950. Thereafter lectured at the Kaiser Foundation in Oakland. During the middle 1950's became that foundation's research director. Married after the war; two children, a boy and a girl. His wife died suddenly; accompanied by his children he became a wanderer and trav-

eling professional. Traveled and lectured in Mexico, Spain, Italy and Denmark. After a terrible fever in a hotel at Torremolinos in Malaga, felt that he had died and was reborn. Two events then changed his life. Dr. David C. McClellan, director of the Center for Research in Personality at Harvard, persuaded him to come back to Cambridge and take a post at Harvard. Then, in suburban backyard, Cuernavaca, Mexico, had first visionary experience with raw mushroom, *Psilocybe mexicana*, procured from village witch near Mexico City. The journeyman transformed; mission, with the help of such material: to apprise others of eternity and to wage a crusade against crusades. Reaction to the drugs, controversy and announced discontinuance of his Psilocybin Project: (1) "The relationship of our project to Harvard has always been uneasy. We were enthusiastically introducing a powerful, non-verbal, meta-intellectual agent into a community which is fervently dedicated to words and intellectuality. We appreciated and sympathized with the academy's dilemma, and congenially separated. . . ." (2) "This is more important than Harvard."

On the face of it the Leary-Alpert psilocybin study appears to have been reasonably successful. Experiments began at the Center for Research in Personality in September 1960. On January 15, 1961, the group started working with inmates at Massachusetts Correctional Institution in Concord. The program was carried on for two years.

Although the rehabilitation project involved only thirty-five inmates, of which number no more than twenty-two had been released from prison before the study was transferred away from Dr. Leary and his colleagues, the psilocybin treatment showed some encouraging results. According to the project's Second Annual Report, the recidivism rate (inmates returning to prison as the result of parole violations or new crimes) was 32 percent. This contrasted with a national average of 67 percent. The study, though incomplete, seemed to indicate that prisoners given a chance to achieve insight via psilocybin's "transcendental experience" were fairly good bets to stay "on the street" (out of jail), especially when they took part in postrelease consultations among themselves and with members of the project's staff.

The success of the Leary-Alpert group in Concord might,

at worst, be debatable in that its findings were incomplete. But there is no indication that the methods employed by Leary had an adverse effect on any of the subjects at the institution.

Nor has there been a mark of failure on Timothy Leary's undertakings elsewhere, such as the creativity change project at the Rhode Island School of Design or an earlier assignment with foster children in New Bedford, Mass. During his two and one-half years at Harvard Leary contributed papers to meetings of the American Psychology Association in Chicago, the Northeast Regional Conference of the American Public Welfare Association in Boston, and the Mexican Society of Neurology and Psychiatry in Mexico City. He delivered his talk on "How to Change Behavior" before the Congress of Applied Psychology in Copenhagen, sharing the platform with Aldous Huxley. ("Behavior Change" was the title of a course he taught at Harvard.)

At various stages of his career he has published studies of "Interpersonal Behavior and Behaviorism," "The Effects of Test Score Feedback on Creative Performance and of Drugs on Creative Experience," "Multilevel Measurement of Interpersonal Behavior," "Interpersonal Diagnosis of Personality," "Drugs, Set and Suggestibility," and "Helping the Helpless," which dealt with the foster children.

Here to all appearances was an energetic, creative intelligence at work—one you would think ought to be welcome on any college faculty. Yet by the end of 1962 Harvard didn't care to have this man around, and was glad to get rid of him on any pretext.

The flaw in Harvard's handling of the matter lay in the unfortunate circumstance that the university felt it had to use a pretext, and in doing so it exposed two brilliant and serious men to public view, quite mistakenly, as trivial adventurers. I don't mean that Harvard lacked the right, even the intellectual right, to dismiss Leary and Alpert. Why keep people on your teaching staff whose research methods do not, in your opinion, conform to the rules of the game? But the real reason for taking action against them ought to stand alone. The story was published late in May, reporting correctly that Alpert had in fact given psilocybin to one undergraduate in violation of a pledge not to do so. No harm had come to the young man, but a promise is a promise, and obviously Alpert had been caught in an error. But it was not so horrendous a fault by itself—

the only cited instance—and the assistant professor might have expected to be let off with a warning, especially since the project had been discontinued months before.

The plain truth is that the justice meted out to Leary and Alpert was administered in an atmosphere of embarrassment and irritation all around. The academic dispute over Leary's methods became bound up with stories about the scattering of LSD-soaked sugar cubes in the area around Harvard Square. In actual fact, no member of the project at the Center for Research in Personality was accused of having anything to do with a black market in these materials. It was simply a bum rap, but it has marked the project. Dozens of people have said to me: "Oh yes, those guys who got into trouble turning people on at Harvard . . .," implying that members of the group were not much better than pushers.

An impression of over-all irresponsibility at the Center was conveyed in a *Time* story (March 29, 1963) which described Leary and Alpert as "freewheeling" and "euphoric" types acting "blithely unconcerned over the university's decision to cancel the project."

The university had let the rumors of irresponsibility grow far beyond the legitimate complaint that Leary's research techniques were exotic and possibly improper. On November 26, 1962, Dean John U. Monro and Dr. Dana L. Farnsworth wrote a joint letter to the *Harvard Crimson* warning students that LSD and psilocybin "may result in serious hazard to the mental health and stability even of apparently normal persons." A week later, according to *Medical Tribune*, Dean Monro said that the letter had been written because of a "fairly persistent campaign to interest students in such drugs. . . ." Again innuendo led to some wild reporting. The *Crimson* said it had heard from students that "one black market ring has been selling sugar cubes impregnated with LSD to undergraduates for about \$1 a cube." If there was such a ring, it must be judged wretchedly incompetent to sell its material at such a low figure.

Following up the story, *Medical Tribune* reported (March 11, 1963):

Both the Boston office of the FDA and Massachusetts authorities began immediate investigations at Harvard, but later stated that they could find no evidence of illicit hallucinogen use at the univer-

sity. Since the beginning of the New Year no new charges of such use have been made.

In his paper on creative performance, Timothy Leary drops a remark which will serve as a perfectly good explanation for his eventual departure from Harvard: "What is most eccentric about our studies is the combination of methods which are very western—drugs—with a research philosophy which is currently out of vogue in American administrative philosophy."

To begin with, in the rehabilitation program at Concord, psychologists in the Harvard group took psilocybin along with the prisoners. It was a standard technique. At least one of the researchers "stayed back," not taking the drug. One or more members of the team received dosages usually somewhat less than those given to the inmates. In this way the investigators operated on various levels of reality. Those under the drug were psychologically or (to use a term that must come up) spiritually closer to the inmates' problems than their note-taking colleagues could be.

This was a serious technique, but disconcertingly democratic. The Harvard investigators—under psilocybin—had little if any more dignity, prestige or authority than the malefactors. In these circumstances the psychologists were sometimes found being consoled by the prisoners!

Leary:

[Our] guiding principles . . . are somewhat different from those involved in traditional psychotherapy. Whereas the latter regards the problem of changing behavior as one of "curing" or "illness," i.e., as a medical treatment specialty, our approach is outside the medical framework.

The method was too much for an esteemed member of the Harvard Medical School faculty, Dr. Henry K. Beecher, Dorr Professor of Research in Anaesthesia, who said in a letter to the *Alumni Bulletin*:

This reminds me of De Quincy's *Confessions of an English Opium Eater* . . . rather than a present-day scientific study of subjective responses to drugs.

The Psilocybin Project also made free use of the Harvard Divinity School. Divinity students tape-recorded religious dis-

cussions, and were then given the drug and orbited around their earlier conversation, which they found in many parts to be trivial and even foolish. Anyone who recalled that Dr. Leary had declared in a research paper: "The greatest psychotherapist in world history was the Buddha . . ." might be excused for wondering whether the clinical psychologist was trying to spread distrust of monotheism. He *had* said at Copenhagen:

We are so close to our games. We have been born into them. And we are born into a philosophic system which glorifies hierarchical expertise on the one hand and helplessness on the other. Monotheism, the Judaic-Christian tradition. Monotheism, that game started by a few persecuted outcasts (game losers) in the mid-eastern desert: the subject-object game, the false duality game, the manipulating, predicting, controlling game. Monotheism breeding helplessness.

And had not Dr. Leary's group given psilocybin to thirty-three Protestant ministers as well as Roman Catholic priests, not to mention a few Buddhists? Was not Dr. Leary present—though not in charge—when twenty divinity students and ten project researchers were turned on at a local chapel in a double-blind study to determine the effect of set and setting in subjects' responses to the material? Further, was it not known that Doctors Leary and Alpert practiced multifamily transcendental living, or whatever it was, in two big houses in Newton, outside of Boston, with eight adults and four children in one dwelling, and nine and three in the other?

I first saw Leary and Alpert early this winter. They had come to New York on a fund-raising trip. In the Manhattan apartment they were like two fatigued basketball players, passing off the ball to one another, working to overcome the determined resistance of an intent audience made up of some rich people, *aficionados* of psychoanalysis, editors and writers, and a few others who just wanted to be saved.

Leary struck me immediately as a man who would never again be without disciples. Graying, appearing a little older than forty-two, he patiently tried to explain the aims of IFIF. He looked at us out of bluish-gray, penetrating eyes that glittered at times, when he concentrated on a question. He was exhausted and spoke in a low voice that now and then could

not be heard. Because of the hearing aid, of course, one was sympathetic.

The two men were obviously deep in their project, and yet there was a medicine-show quality about them. They seemed peddlers of happiness. The audience was attracted to them, and even fascinated by what they had to say, but also hostile. Richard Alpert, a quick and kindly young man, did his best to explain that happiness was the point beyond therapy. The audience persisted in asking about "treatment," and our visitors grew wearier. Timothy Leary had that abstracted look of a person who can see with absolute clarity what no one else will believe is there. I noticed a beautiful young woman gazing at him, and learned after the talk was over that she had come down from Boston with the IFIF entourage. When the presentation was finished she slipped her arm through his and gazed up at him.

I asked whether poets wrote better poetry, or businessmen made more money, after an LSD experience. The answer came back, always patiently, that the life of anyone could be changed, and marvelously for the better, by LSD or psilocybin, although of course there could be no guarantee of it. But one thing was likely—the subject would discover how to play the games of life better than he ever had before.

And this was enough for me to volunteer as a research subject—to discover what sort of mystery these people were carrying around in a bottle, and perhaps find out some secrets about myself.

Medically certified as being in good health, I kissed my wife good-bye and picked up my notebook and tape recorder. She and I were nervous. After twelve years we were going through a period of tension, being frequently at odds, and just not connecting. We had heard Timothy Leary say that a session with one of the consciousness-expanding drugs had on occasion helped to "save marriages." The people involved did not go through the initial experience together, but met hours afterward when whoever took the voyage began to come back down from it, so this time I went out with Ralph, one of the two psychologists who would be with me, and my wife stayed on the other side of town.

It was eight o'clock at night. We walked along the dark avenue toward the apartment where we would have the session. Arthur was already there. He would remain back, "on the

ground"; in other words, take no LSD tonight. My companion on the voyage would be Ralph, the tall and solemn young man now walking with me. Like most of the IFIF people I had met, he spoke quietly and from well within himself. He was in his early twenties. I was amazed to hear that he had been on this voyage more than 100 times. At his age, I thought, he must have orbited in inner space about once a week for two years. Yet he could not have an addiction, in the sense of a physical need. Even the doctors who held the most conservative views regarding the uses of hallucinogens had not reported signs of the material bringing on a physical craving.

Nor did Ralph give me the impression of being spiritually hung up. In fact, as we walked along he explained that the virtue of transcendental living, including the LSD experience, was that it encouraged "up-leveling out of your hangups." Although gentle in manner, he had a quick, attacking mind. If he tended to be grave, he was also funny. I must say that his vocabulary conveyed a sort of detachment. He said at various times: "my projector discovers . . .," "according to my viewing screen . . .," and that to achieve internal freedom "you've got to change your lenses and look at life a new way." But such jargon is likely to be spoken by all persons involved in what they believe to be revolutionary movements—psychoanalysis, communists and astronauts all have theirs. Earlier I had heard Timothy Leary reply to someone over the telephone: "Well, the robot is tired; but I'll be home soon." So I was not surprised to hear Ralph speak of his robot. Detached references to the body and senses came naturally to people with an intense consciousness of souls they could call their own, astronauts of the interior who (via LSD) could roam about eternity whenever they felt like it, and who therefore were very much aware of being temporary inhibitors of a human form on this planet.

We arrived at the apartment, joining Arthur there. A lively and incisive young man of about thirty, a teacher, he also radiated that perplexing good will that I had encountered among all of Timothy Leary's colleagues. (But Leary himself, I thought, was a bit more sardonic and not entirely disappointed by the turmoil he had stirred up at Harvard.) Tonight Arthur was tired. He had a fever and hoped to get a few hours' sleep whenever his presence was not needed. Ralph had an early-morning date with his girl—even though the session would last all night.

While they were in the kitchen preparing the materials, I opened up my small Japanese tape recorder and hung the microphone on the back of a chair. I had only fifteen minutes' worth of tape, but trusted that an interesting flow of talk would be obtained from that. I also had five newly sharpened pencils. I laid out memo pads around the room. They had printed on top, in large red letters: "DON'T FORGET." Ralph smiled and said: "That may turn out to be a huge cosmic joke before the evening is over."

Arthur had put a match to the paper, kindling and logs in front of me and now the fire blazed up. He lit the candles on the mantel. Feeling still and watchful, I looked up through a big skylight at the stars and waited. The candles smoked and somebody put on a record. It was music I had brought: Charlie Byrd's "Bossa Nova Pelos Passaros." A record you especially like is part of the comfortable "set and setting," but Charlie Byrd's guitar turned out to be much more than that—a melodic link to life when I desperately needed it.

Arthur placed cushions on the rug. Ralph, my fellow voyager, came in with the cocktail. It looked something like a Gibson. It was slightly bitter but pleasing. I sloshed water in the glass and drank down the last traces of the LSD material. We took off at nine-thirty. It was strange to imagine that in twenty minutes or so I would start to take leave of my senses as I ordinarily used them. I taped Arthur's instructions:

"There are two things to remember. During the experience you're going to come to choice points. When you reach them, imagine that you can go up or downstream. Go downstream always if you can. Just go with it. Second, if you get hung up, always trust your partner. You can trust this cat. If you feel that you're going too far out, move toward your partner. Stay with Ralph."

He said: "I'll be in the next room. Call, and I'll be right here. Remember that. Have a good voyage."

"Why do you keep saying to trust him?" I asked.

"Paranoia," Arthur said. "You'll probably be suspicious of him. Maybe of me. That's part of it. But now that you know, you can watch for it."

When Arthur left the room Ralph lay back on his couch. Looking uncomfortable for the only time during the night, he said: "If you don't like me . . . this can happen at some point . . . feel free to say so."

He stretched out and closed his eyes. "Our biggest choice," he murmured, "will probably be whether to keep our eyes open or not." Some minutes later his voice said: "Muddy water let stand still soon will become clear." I said nothing to him. Every now and then I uttered a few self-conscious phrases for the benefit of the tape recorder, and then switched it off. Nervously the soloing cadet, his own Walter Schirra, waited for the moment when he would cut out of time. The veteran traveler dozed. I worried about the wax gathering on the rim of the candlestick. It would soon begin to drop onto the mantel. Somebody in the hall changed the Charlie Byrd record, flipping it over.

It began with a salty taste in my mouth, and my vision started to become prismatic. (One's pupils actually dilate and appear to be the size of quarters.) There was a pressure in my head. The curtains seemed to billow. There might be somebody behind them. The air crackled silently. I had a feeling of colored musical notes floating about, and the scene, I can remark now, was quite like a Klee drawing. I felt a bit queasy, but it passed. The music was louder and the guitar strings beautifully separated. Ralph was looking at me, and I began to laugh. I was going to flip on my tape recorder! What a ridiculous, hilarious thing to do! Why not, though?

"Why not?" Frank said, and we both laughed. I couldn't stop. Everything that I could think about was insanely and pitifully funny. The world. The universe. All the poor sweet pitiful people I knew. Myself. What a scene! Filled with noble, ridiculous people! The world, the world!

This reaction which is Cosmic Laughter was different from any way of laughing I had known. It came out of me as though propelled by a force much larger than the person laughing. It came right up from the center of my being. The force continued throughout the major part of the experience, no matter what I was feeling. It resembled both a mild and sustained electric shock passing through the body and spirit, and a mild and incomplete and continuing orgasm. A throbbing and rhythmic current which for want of a fresh image—and one is no longer afraid of being banal—could be described as the life force shakes you, as if you might be aboard or bestride, or being carried along with, the force that penetrates and then fills all being.

On tape a man may be heard breaking up. His voice be-

comes noticeably higher-pitched and breathless. Then into the laughter comes a new sound, of fear. The voice trembles. The same force projected through me an enormous grief over the Cosmic Joke. (Timothy Leary has remarked: "The ones who begin laughing always feel the terror later. They realize that the joke is on them.") I wept and sobbed, occasionally laughing. Even now, listening to the tape, I feel sorry for the individual as though it were somebody else.

The machine captured outcries from beyond despair, and frantic attempts of the man to keep himself together, to summon his intelligence and apply it against the grief that has come over him. "Oh, God . . . This is awful! . . . Oh . . . Oh . . . I didn't realize it would be so physical. This stuff won't let you go! . . . Oh . . . My God, what have I done?" Suddenly the predicted hostility comes forth. "Why are *you* so peaceful?" I demand of my fellow voyager. "How can you stretch out and smile while I suffer? Why am *I* the only one to suffer?" Then in a small voice, "I guess there are others. They suffer too."

"Yes . . ." murmured my partner, lying with his arms folded, cruising in space. He had explained that there were storage places in eternity where a traveler could park himself, watching, ready to help the neophyte passing through the turbulent area.

"This is awful. God . . . I want to get back."

" Swing with it!"

It was Arthur's voice. I saw him through air that seemed to have turned to jelly.

" Swing with it? Okay! Sure. That's right. Ha! Ha! But it's hard. I wonder if I can stand up. Shall I try?"

" Why not?" said Ralph, eyeing me compassionately over his folded arms.

" There. You see. I did it. I can walk. But I don't know why I did it. What's the point?"

We laughed but then I heard strange music.

" What's that? I didn't bring that. It's religious music! It must be yours! Is it real! No, no, it's on a record."

I have an aunt near Boston who doesn't speak to anyone in her family. Whenever she disapproves of what a person has done she stops speaking to him. It's very simple. She believes that a person should never be praised because if he's done well that is what he should do. Only his inadequacies are worthy

of comment. This aunt's face appeared on the back of a leather chair opposite me, frowning and malevolent. But curiously enough I felt sorry for her, and on tape my voice says mildly: "Well, she has a right to be there. She shouldn't be so disapproving though."

I realize that personal revelations may be of no great interest, and that they will turn out to be embarrassing and tedious if wallowed in, but for the record, I burst out with confessions to Arthur, "back there" in reality, having taken nothing. A young writer named Barry Hughart, who has had some experience with truth drugs such as sodium pentathal, says that the subject typically passes through three phases—fear of homosexuality, confessions of phoniness, and a desire to go home to mother.

In this LSD experience there was no specific homosexual feeling; in fact, I have not heard of any intensified sexual desire, or arousal to action, occurring under the influence of the material. (I have a suspicion that this whole business can, if one wants to play it that way, become a substitute for direct sexual activity, because there is an over-all increase in sensuousness, but this is diffuse and random.)

I would say that the experience has a "mess around" quality involving physical expressions of affection. Especially if the voyager is in distress, his companion may reach out and hold him tenderly, saying: "It's all right!" and the afflicted traveler in this situation, if his ego is still there, may think: "Now wait a minute . . . what's this?" Similarly, when a girl participates in any of the roles we have been talking about there will be the same embracing by way of consolation or—to use the adjective properly—Platonic affection, as the subjects move through various stages of the voyage; it's not like the listlessness felt in an opium pad, and it's ten miles from being an orgy, but the connection among all the people in the group is more involved than it would be at a cocktail party—that's for sure.

The confession of phoniness will sound trivial, but it was a matter of terror to me, absolute terror, that I was boring. The sum total of me in the universe was *boring*.

The voice on tape sobs: "I'm boring. Oh, Jesus, so *boring*," etc., until finally Arthur's voice replies with some annoyance: "Yes, as a matter of fact, you are *boring*," and the absolution, or whatever it was, made that panic go away.

The next confession beginning at this point and recurring for the next few hours was that I loved and desperately wanted my wife. This was a surprise to everyone, including ourselves, because as I said we had been through a bad time together. But under LSD it is impossible to fake anything: she was my connection with life.

Someone commented later: "Well, what's so surprising about two people who have been together for twelve years having a bond between them?"

Nothing, I suppose, except that the bond can be buried in the details of everyday living; it can be forgotten; the bond can be taken for granted and become boring if you let it, but just the same over the years it may still be the main cable attaching you to life. During the parts of the LSD torment when an ego is being shredded, you know who your friends are. When time and space were disappearing I called to her. The only other link to remembered things was the beautiful progression of chords from Charlie Byrd's guitar.

The physical world I could see had begun slowly to come apart. No cubic inch of space had to do with any other. Everything in my field of vision turned into bright jelly. There was no time and place, nothing but a flow. I got up and waded through the room, making my way unsteadily. Around me the music, the fire, and the candle dripping, the lights of nearby buildings, all combined and flowed. Yet I could see Ralph and Arthur watching me, and I saw my own situation with terrible clarity. I had gone too far out and couldn't get back! I called to Ralph, remembering what Arthur had said in the beginning: ". . . if you get hung up, always move toward your partner." I did, crying: "Help me. I want to get back!"

The jelly before my eyes separated. The universe cracked into bright globules and separated; then I was in little pieces, about not to exist anymore, and being borne away on something like a jet stream, and this was the stream Arthur had mentioned, streaming unconsciousness that one was supposed not to fight. Let the ego die. Go with it—but I fought upstream all the way. Ralph caught my hand and said: "Go with it!" But I said: "Get me out. I want to go home. Where is she?" They were like people trying to help me in my envelope of flowing air, not being able to do anything but sympathize. But we could see each other with amazing clarity all this time. They were making notes on me! Arthur had a chart.

"Help me get back!"

Arthur stepped close to me and said: "There's no way you can shorten this. You've got to go through every stage. You've got to go all the way. Just let go!"

I ran to look at my watch to see how much time had gone by, and how much longer I would be in this, but my eyes were so dilated that I couldn't see the numbers or the hands, and then I forgot what time was. The candle was dripping on the mantel, and I pointed to what was happening, and Arthur placed a saucer underneath the candlestick, but where had the universe gone? I'd find it. I would walk out!

The foregoing, by the way, is attended by a great deal of shouting and sobbing. If the subject is having quite a bit of trouble the neighbors will be alarmed. For this reason LSD sessions should be held in top-floor apartments, remote places, or rooms with thick walls. Otherwise if somebody should call the police or the janitor, the uninvited visitors would observe a hollering madman on the floor, and there would be too much explaining to do. Also, the session must be carefully guarded by the psychologist who has stayed back, because the soul in disorder can become panicky and decide, as I did, to leave the premises. They have a dim recollection of "home" somewhere, like the world, and feel that if they can "go out there" everything will be all right. But unfortunately there is no world anymore, and if they should get out in it there would be panic in the streets for certain, and the possibility of embracing an oncoming car, or something like that. The intended departure is easily blocked by the psychologist in charge. A subject, so far as I know, will not be violent in this phase, having no place to stand from which to launch a violent act, either physical or mental, since he's not even sure that he exists. The conception of self varies from one moment to the next, and this is the agony.

In the next room a telephone call went to my wife, one of many during the evening. "He's having a bad time. Yes, really bad. He won't give up his ego. He refuses to die," the caller said with irritation. "He's fighting it. Well, the bigger they are the harder they fall. What? I'm speaking of egos. You know, he's calling for you. Yes, you. You're the only person he wants."

"Calling for me?"

"Yes. I don't know. Neurotic dependency . . . that's love. What's the difference?"

"Is he the one making all that noise?"

"Yes, he still won't get up."

"He's schizoid enough as it is. I knew I shouldn't have let him do it. He's probably having awful memories. Oh, yes. When he was a baby he's supposed to have had a nurse who did something or other. Ask him. . . ."

The only square thing that happened during the evening was when they came running in, as I rolled around on the floor trying to avoid going downstream, and yelled in my ear: "Do you remember a nurse? Did she do anything? . . ."

I didn't know what he was talking about. There was no nurse, no desire to top Oedipus, no wish to kill my poor father. None of these people were on the scene at any time. The LSD voyage goes out far beyond one's small private history. My trip was back through the cycle of being, which—if Jung's collective unconscious really exists, as I could now swear it does—is the recurring history of you and me, all of us.

The ego can stand out against the universe for just so long, and then it lets go and "dies," going downstream. But at some point there must occur the ride into the hell of ego, a passage through the glowing coils which plant endless bright circles in the mind. Far from home, far into inner space, the voyager can no longer be helped by his serene companion who cruises compassionately alongside the frightened speck of ego. The huge melancholy eyes watch from the couch. The brotherly hand is out-stretched but ignored, and the ego travels in no time, no space, no dimension like an astronaut flung out too far who will never return until time bends back on itself to his real, dear home, and if it were not for the remote stroke of the guitar he would perish utterly in this immense void.

Arthur offered me the pulp of an orange. The schizophrenic presence accepted it, huddling cold in his jacket, then sweating with the heat from the fire, shivering, and gasping for breath.

Meanwhile the fleck of existence performed every act it had never dreamed of performing. While the body in the living room constantly changed positions, during which at various times it was fetal, crawling and sucking its thumb, the speck was pushed by a tremulous current into a lotus of naked bodies, and diving in, was folded into the universe, as it the universe was making love to itself. The speck then flew to the

top of all things, and saw in every direction what was and will be. The Enduring Situation was this:

In space an endless power station, plugged and electrical, with a current pulsing through every part of it. This structure, resembling a playground jungle gym, was the totality of all being. Individual living beings attached, in stasis, made up the structure. The relationship of each being to the whole was somehow religious and also sexual.

Thereafter the speck whirled down a great glowing tract, experienced a terrific pressure, as if its mass were built up intolerably, and re-entering was thrust down, labored, felt a collar, and burst clear of the ordeal.

I rested on the couch, with the colored musical notes still floating in the air around me, and I was shivering and saying: "I want to go home now. Where is she?"

Ralph smiled and informed me from the rug: "You're only a third of the way through."

"No!" I said. "I won't go back there."

It wouldn't be necessary. The death-and-rebirth phase was passed. Now we were on a plateau, the philosophical plateau, from which one can take off again or come back down. We talked about games and the love-preventing monster of ego—which was the view of yourself as opposed to identity, your self in action. We talked about the highest good being play, and the word "play." For instance, you don't work the piano. The monotheistic religions had converted play to puritanical "work," the duty of ego. I said: "What do you want to do with your life, Ralph?" and he replied: "I'm in the Buddha-making business." We discussed Norman Brown's concept built out of Freud that Time and History were forms of neurosis. We mentioned people making time and making history. I knew an advertising man who came to New York to sell space and ended up buying time.

Arthur who had been asleep came in and we talked. I said something, I forget what, and he got up hurriedly and left. I thought I had offended him.

"I've betrayed him in some way," I said. "I've always been a Judas."

"A thread of paranoia running through the universe," Ralph mused. "Live out that fantasy if you feel it."

"I've never known how to live."

"You just get up in the morning and do the best you can." A man came jauntily into the room. He looked at me in a manner that was both kindly and amused.

"How do you feel, Alan?"

"Fine now. But it was terrible."

He said: "Now you know what it's like to suffer ego loss." I answered: "My ego loss was so catastrophic that it doesn't matter."

Timothy Leary threw back his head and laughed. He sat down alongside me on the couch. He clapped me on the back offering a swallow of ginger beer and a bite from an apple. Ralph sat on the rug with his hands clasped over his knees. The phone rang. It was a long-distance call for Leary.

I had a perception that Judas was a writer who had sold the rights to Jesus' life story, and whether he wrote him up or delivered him to the orthodox authorities was the same. I had the impression that we were all recurring characters and that Timothy Leary through the centuries had always been offering something like LSD to people, there had always been the girl gazing at him across the room while he spoke to his audiences, Arthur had always been helping him, and Frank had forever taken witnesses on the voyage.

On the phone Timothy Leary said: "That wasn't very cool of you, was it?"

When he put down the receiver we talked some more. He told a story: In an experiment with psilocybin, not his own, the subject had been a young electronic engineer. He went into a panic, and his traveling companion was unable to calm him down. The psychologist in charge happened to be in the bathroom. He called to his wife, who was drying dishes in the kitchen: "Straighten him out, will you?" She dried her hands and went into the living room. The distressed engineer cried out: "I want my wife!" and she put her arms around him, murmuring: "Your wife is a river, a river, a river!" "Ah!" he said more quietly. "I want my mother!" "Your mother is a river, a river, a river!" "Ah, yes," sighed the engineer, and gave up his fight, and drifted off happily, and the psychologist's wife went back to her dishes.

"You feel like going home?" Leary smiled.

"Yes. But I don't know if I can make it."

"You can do anything," he said. "Better than you ever did."

You feel that something big physically has happened to you. You feel violence in your system. The drug doesn't cause that. It's in you all the time. Your cells are exploding with energy. There's more electrical energy in a cluster of cells in your body than Con Edison can produce. LSD isn't causing your eyeballs to see new things. It's just helping you to pick up on them."

He spoke of the Tibetan Book of the Dead and the first, second and third Bardo's: Pure Being, hallucinatory stage, and the "return to the robot." Referring to the astronauts he compared the turbulent area separating the earth's atmosphere from outer space to the Tibetan "Area of Wrathful Deities." The object, of course, should be to stay out in Pure Being. But this was enormously difficult. Most of us were condemned not to reach this state for a long time. He said, "Watch out lest you be born again, poor guy, but if you are at least pick out a good womb."

Ralph reminded him that religious men from the East sometimes didn't care at all for LSD. A Zen master had been infuriated, and a Buddhist priest came apart worse than any life insurance man from Peoria, wailing: "You've poisoned me!"

Timothy Leary yawned and said that he was ready for bed.

Ralph and I went back to my house, and my wife held out her arms to me, and she looked as good as a piece of apple pie. Still nervously crackling with energy I fell into bed. My wife made us steak and potatoes, and we drank some beer, and we were joking together. The walls were as holey as cheese, and still billowing around me; the colored musical notes floated by, but not so many of them. Small, throbbing currents still moved through my body, but I was coming down. I could read the paper. I happened to look at Leonard Lyons' column in the *New York Post*. Though my LSD reaction was waning, I felt the old cosmic laughter that had started, it seemed ages ago, in the apartment with the skylight. Mr. Lyons' items seemed as insanely and pitifully funny as any in the universe. There was one:

A. E. Hotchner, the adapter of Ernest Hemingway's stories, has a home in Westport. In Connecticut car owners are permitted to have four letters on their license plates. . . . Hotchner owns two cars. One has plates marked "HOTC," and the other "HNER." When the cars are parked side by side, the plates spell out his name.

I fell out of bed laughing, and contemplated this item for several minutes. I sat and pondered other paragraphs between the dotted lines:

. . . Frank Sinatra's Youth Center near Nazareth soon will be ready for occupancy. . . .

and

Cleopatra will give screen credits to Plutarch and Suetonius. "They were clever fellows, those two," said Darryl Zanuck of the ancient historians, "but they didn't know a thing about residuals."

The musical notes jumped, the walls bellied, and the small shudders of electricity were fading. I studied the melancholy countenance atop this column of ego. I saw the chronicler as a gallant little man running through time, carrying a handful of threads and presenting them to people and running on.

I thanked Ralph for being my companion, and for his help on the voyage, and we said good-bye to him. My wife brought me a cup of tea. I remembered something a prisoner treated by Timothy Leary's group had said after his first psilocybin experience was over: "My whole life came tumbling down and I was sitting happily in the rubble."

During the summer I have thought many times of Timothy Leary and his colleagues in Zihuatanejo, practicing transcendental living in the hotel by the beach, with the disciples gathered around (the hotel has been *filled*). It occurs to me that socio-religious groups of this kind may be found in virtually every decade of American history. We have had the Brook Farm group from 1841-47, with Emerson and Hawthorne among others, and Thoreau sitting in. Robert Owen established seventeen socialist colonies in the 1820's. There were forty Fourier-oriented group farms in the United States during the 1940's. We had the disciples of Father Rapp who founded New Harmony, Indiana, and Economy, Pa., and the Oneida Community, and many others, and they were mostly all socialists and religious, and to some degree communal.

But the religious revolutionaries of the International Federation for Internal Freedom have something else going for them besides good will—and this is the most powerful mind-altering

material known to man. To be used for sinister purposes? No, unless (and this could be) unregulated, anarchistic good will is sinister.

I am looking at an article that might as well be called a manifesto reprinted from the *Harvard Review* (vol. 1, no. 4, Summer 1963): "The Politics of Consciousness Expansion," by Timothy Leary and Richard Alpert.

It contains these jet-propelled and terrifically condensed passages:

Social processes: The free expansive vision is molded into the institutional. Hardly is the institutional mortar set before there is a new cortical upheaval, an explosive, often ecstatic or prophetic revelation. The prophet is promptly jailed. A hundred years later his followers are jailing the next visionary.

One is led naively to exclaim: Will man never learn the lesson of cyclical process? Must we continue to jail, execute, exile our ecstatic visionaries, and then enshrine them as tomorrow's heroes?

Naive question, which fails to appreciate the necessary tension of the expansion-contraction play. Membrane contracts. Life force bursts membrane. Establishment controls vision. Vision bursts establishment.

I have one other recollection of Timothy Leary. Describing an LSD experience of his own, he closed his eyes and smiled, murmuring: "I die so hard!"

5. HOW TO CHANGE BEHAVIOR *

TIMOTHY LEARY, PH.D.

It is my plan to talk to you tonight about methods of effecting change—change in man's behavior and change in man's consciousness.

Behavior and consciousness. Please note the paired distinction. Behavior and consciousness. Up until recently I considered myself a behavioral scientist and limited the scope of my work to overt and measurable behavior. In so doing I was quite in the *Zeitgeist* of modern psychology, studying the subject matter which our American predecessors defined some fifty years ago, behavior, routinely following the ground rules they laid down, scrupulously avoiding that which is most important to the subject—his consciousness, concentrating instead, on what is most important to we who seek to observe, measure, manipulate, control and predict—the subject's overt behavior.

This decision to turn our backs on consciousness is, of course, typically western and very much in tune with the experimental, objective bent of Western science. Professor Huston Smith of the Massachusetts Institute of Technology has pointed out some basic differences between Western approach and the philosophies of China and India. Differences which have some importance for the applied psychologist concerned with behavior change. Professor Smith reminds us that our Western culture has stressed measurement and control of objects; whereas China has historically emphasized the rules of the social encounter; and Indian philosophy the development and expansion of human consciousness. Tonight I speak to you

* Osgood, Ch. E. "Towards international behavior appropriate to a nuclear age." *Psychology and International Affairs*, Proceed. XIV Int. Congr. Appl. Psychol., vol. 1, 109-132. Copenhagen: Munksgaard, 1962.

from a point midway between the Western and Eastern hemispheres of the cortex presenting a theory and method which is Chinese in that behavior is seen as an intricate social game; Indian in its recognition of consciousness and the need to develop a more cosmic awareness, and finally Western in its concern to do good measurably well.

I plan to present, first, some thoughts on behavior change, then some new conceptions of consciousness and its alteration, and finally some data from recent research in these areas.

Behavior and Its Change

Except for reflexes and instinctual reactions and random muscular movements (which fall into the province of physiology) all behavior is learned.

Behavior is therefore artifactual and culturally determined. Behavior sequences might usefully be considered as game sequences.

The use of the word "game" in this sweeping context is likely to be misunderstood. The listener may think I refer to "play" as opposed to the stern, real-life, serious activities of man. But as you shall see I consider the latter as "game."

At this point you are asking for and you deserve a definition. What do I mean by game? A game is a learned cultural sequence characterized by six factors:

1. *Roles*: The game assigns roles to the human beings involved.
2. *Rules*: A game sets up a set of rules which hold only during the game sequence.
3. *Goals*: Every game has its goals or purpose. The goals of baseball are to score more runs than the opponents. The goals of the game of psychology are more complex and less explicit but they exist.
4. *Rituals*: Each game has its conventional behavior pattern not related to the goals or rules but yet quite necessary to comfort and continuance.
5. *Language*: Each game has its jargon. Unrelated to the rules and goals and yet necessary to learn and use.
6. *Values*: Each game has its standards of excellence or goodness.

Baseball and basketball have clearly definable roles, rules, rituals, goals, languages and values. Psychology, religion, politics are games, too, learned, cultural sequences with clearly definable roles, rules, rituals, goals, jargons, values. They are less explicitly formulated than the so-called sports and therein, dear friends, lies the pity. For this simple reason millions have died and we may die tomorrow.

The behavior which psychiatrists label as disease entities can be considered as games, too. Dr. Thomas Szasz, the distinguished psychoanalyst-philosopher, in his book, *The Myth of Mental Illness*, suggests that "hysteria" is the name we give to a certain doctor-patient game involving deceitful helplessness. The "bluff" in poker is a similar deceitful but perfectly legitimate game device. Psychiatry according to this model is behavior-change game.

Far from being frivolous, many so-called "play games" are superior in their behavioral science and in their behavior-change techniques to the "not-called games," such as psychiatry and psychology.

In terms of epistemology and scientific method employed, the "game" of American baseball is superior to any of the so-called behavioral sciences. Baseball officials have classified and they reliably record molecular behavior sequences (the strike, the hit, the double play, etc.). Their compiled records are converted into indices most relevant for summarizing and predicting behavior (RBI, runs batted in; ERA, earned run average, etc.). Baseball employs well-trained raters to judge those rare events which are not obviously and easily coded. Their raters are called umpires.

When we move from behavior science to behavior-change we see that baseball experts have devised another remarkable set of techniques for bringing about the results which they and their subjects look for. Coaching. Baseball men understand the necessity for sharing time and space with their learners, for setting up role models, for feedback of relevant information to the learner, for endless practice of the desired behavior. And most important of all, baseball scientists understand the basic, cosmic lesson of percentage: that the greatest player gets on the average one hit in three tries, the winning team loses at least one game in three, that no team can lead the league every year, neither Rome, nor Athens, nor London, nor Moscow, nor Washington. Those who wish to measure,

summarize, predict, and change human behavior could do worse than model themselves after this so-called "game."

All behavior involves learned games. But only that rare Westerner we call "mystic" or who has had a visionary experience of some sort sees clearly the game structure of behavior. Most of the rest of us spend our time struggling with roles and rules and goals and concepts of games which are implicit and confusedly not seen as games, trying to apply the roles and rules and rituals of one game to other games.

Worst of all is the not knowing that it is a game. Baseball is a clean and successful game because it is seen as a game. You can shift positions. You know the game is limited in space and in time. You know how you are doing. You sign your contract. You renew your contract. You can quit, start a new game.

Culturally, stability is maintained by keeping the members of any cultural group from seeing that the roles, rules, goals, rituals, language, and values are game structures. The family game is treated by most cultures as far more than a game, with its implicit contracts, limited in time and space. The nationality game. It is treason not to play. The racial game. The religious game. And that most treacherous and tragic game of all, the game of individuality, the ego game. The Timothy Leary game. Ridiculous how we confuse this game, overplay it. Our own mystics and the Eastern philosophers have been warning us about this danger for centuries.

Cultural institutions encourage the delusion that the games of life are inevitable givens involving natural laws of behavior. These fixed delusions tend to rigidity behavior patterns. This rigidity, as Professor Osgood pointed out in his significant opening address of the Copenhagen Congress, now threatens the very survival of the human species itself. (Osgood, 1962.)

So now we come to behavior change. The currently popular method of behavior change is called psychotherapy. A medical game. A curing of the psyche. Psychotherapy interprets confusion and inefficiency in game playing as illness. We call it sickness and attempt to cure it employing the medical game. Consider the football player who doesn't know the rules. Perhaps he picks up the ball and runs off the field. He is punished for not playing the game correctly. He feels badly. Shall we pronounce him sick and call the doctor?

The failure to understand the game nature of behavior leads

to confusion and eventually to helplessness. Helplessness. Let's look at this word for a moment. It's a big concept in understanding science, technology, rehabilitation and, for that matter, the working of the mind itself.

The basic aim of physical science is to reduce human helplessness in the face of the physical environment. Physical science has other goals, of course: to understand, explain, control, measure, predict. But certainly these are ends rather than means. Why explain? Why predict? To lessen fearful ignorance. The technologies which have grown up around the physical sciences, engineering, medicine, also take as their goal the reducing of human helplessness.

Do they not stem from the same survival motive? And the social technologies—psychiatry, social work, applied psychology—is not their goal the reduction of confusion and the increase in human freedom?

Judged by these criteria the game of Western science has not been a glorious success. Our helplessness in the face of physical disease has certainly diminished. Our control over natural forces has given us a sense of mastery. We live longer and healthier lives. Good.

We have created a game model—the subject-object model—which allows us on the one hand to dominate "object" but which has created a world full of human objects. Most of what we do in the name of science results in more and greater human helplessness.

The science game creates wonder drugs whose action is not understood by the user. And worse yet we turn over these drugs to those who play the doctor game, the medical game—whose roles, rules, rituals, language, goals and values place the patient into a passive object status.

The science game, the healing game, the knowledge game are magnificent human structures. They are our proudest game accomplishments. But they are great only as long as they are seen as game. When they go beyond this point the trouble begins—claims to a non-game reality status: the emergence of experts, professionals, priests, status-favored authorities; claims to power and control and priority. Look at the A.E.C. Look at the A.M.A. And watch out! At this point you will find that games which began with the goal of decreasing human helplessness end up increasing it.

Human beings inhabiting those areas of the globe which the

geographic game calls East are, for the most part, well aware of the foregoing issues. It's hard for Westerners to back away, and see the artifactual game structures. We are so close to our games. We have been born into them. And we are born into a philosophic system which glorifies hierarchical expertise on the one hand and helplessness on the other: monotheism, the Judaic-Christian tradition. Monotheism, that game started by a few persecuted outcasts (game losers) in the Mid-Eastern desert: the subject-object game; the false quality game; the manipulating, predicting, controlling game. Monotheism breeding helplessness.

Now, let's apply this general discussion of helplessness and the behavior game to the issue of behavior change. In spite of our apparent executive control over nature we have had small success in developing behavior change games. Indeed most of our attempts to change behavior increase human helplessness, lessen human freedom and thereby exaggerate the problem we set out to solve. Our behavior change games invariably set up structures which give more power to the few and less power to the many, invidious role models: doctor-patient; professor-student; inequitable rules involving secrecy and control; the one-upmanship language we call jargon.

When people come to us and ask us to change their behavior, why can't we do it? Why can't we teach them to see the game structure of human society? The problem seems simple enough. Why can't we find out what games they are caught up in? Find out what games they want to commit themselves to? Make them explicit? Help them discover the rules of the game, the role, the rituals, the goals, the concepts? Expose them to models of successful game playing; encourage them to practice; feed back objective appraisals of their performance; care for them and their game struggles? How do you care for them? You share time and space with them. Nothing else can substitute. We have little else to offer. If we don't, they'll learn the games of those who do share time and space. If they're prisoners, then who will teach them behavior games? Who shares the most time and space with prisoners? That's right, the other prisoners, older criminals and younger criminals. So who influences behavior in what direction? And who shares the most amount of time and space with prisoners? That's right, the prison guards who, in most

American prisons, teach them how to play the role of robber in the game of "cops and robbers." And we professional middle-class experts? How much time and space do we share with the prisoners? An hour a week on the medical ward?

O.K. It sounds simple enough, doesn't it? Just show people that their social identity and their entire cultural commitment is a game. They aren't aware of it. Sure, just tell them.

Yes, you smile when I say this. It's not quite that easy, is it? Here's the rub. Few people, a very few people (and we Westerners call them mystics) are willing and able to admit that the game is a game. Most of our people become upset and even angry when the game is identified—the game of "I-and-all-I-stand-for."

At this point when you hear the word "mystic" you may be uneasily wondering if you are going to be subjected to a vague metaphysical discourse on general principles. Perhaps you will be surprised to hear me suggest the hypothesis that the most effective approach to the "practical" games of life is that of applied mysticism. Identify the game structure of the event. Make sure that you do not apply the rules and concepts of other games to this situation. Move directly to solve the problem avoiding abstractions and irrelevant rituals. A mystic Martian or a person from a different culture might be an excellent consultant for a behavioral problem. They might be able to cut through irrelevant games rules to what is most relevant to survival and peace of mind.

How can we make the point? How can we learn the lesson? How can we Westerners come to see that our own consciousness is infinitely greater than our little egos and the ego games into which we are so blindly caught up? That the universe within our skulls is infinitely more than the flimsy game world which our words and minds create?

Put in a sentence—the task is to see that the mind is a tiny fragment of the brain-body complex. It is the game-playing fragment—a useful and entertaining tool but quite irrelevant to survival, and indeed usually antagonistic to well-being.

The process of getting beyond the game structure, beyond the subject-object commitments, the dualities—this process is called the mystic experience. The visionary experience is the non-game, metagame experience. Change in behavior can occur with dramatic spontaneity once the game structure of behavior is seen. The visionary experience is the key to behavior change.

Consciousness and Its Change

How do we obtain the visionary state?

There are many methods for expanding consciousness beyond the game limits. Mr. Aldous Huxley this afternoon presented a scholarly history of the same classic and modern methods. Margaret Mead, the American anthropologist, has suggested several cross-cultural methods. Have a psychotic episode. (This is to say, just stop playing the social game for a while and they'll call you insane, but you may learn the great lesson.) Or expose yourself to some great trauma that shatters the gamesmanship out of you. Birth by ordeal is a well-documented phenomenon. The concentration camp experience has done this for some of our wisest men. Physical traumas can do it. Electric shock. Extreme fatigue. Live in another and very different culture for a year where your roles and rituals and language just don't mean a thing. Or separate yourself from the game pressure by institutional withdrawal. Live for a while in a monastic cell. Or marry a Russian. Sensory deprivation does it. Sensory deprivation cuts through the game.

Certain forms of sensory stimulation alter consciousness beyond games. The sexual orgasm is certainly the most frequent and natural, although so brief and so built into interpersonal courtship games that it has lost much of its mystical meaning in the West. We have recently learned from W. Grey Walters and William Burroughs about photostimulation as a means of consciousness alteration. Concentrated attention to a stroboscope or flicker apparatus can produce visionary experiences.

The most efficient way to cut through the game structure of Western life is the use of drugs, consciousness-expanding drugs. From here on I shall use the abbreviation CE to refer to consciousness-expanding substances, such as LSD, mescaline, psilocybin.

Now the reaction of the Western world to consciousness-expanding drugs is extremely interesting. We tend to apply our familiar game roles, rituals, goals, rules, concepts to the non-game experience produced by these substances. Those of you who have not had the shattering exposure to such old and worshipped plants as peyote and the sacred mushroom and

cannabis or such startling newcomers as psilocybin¹ and lysergic acid will wonder at this point about the nature of these experiences. What do these substances do? The neuro-physiological answer—the answer from outside—to this question is not yet ready. The answer from the inside (from the awareness of the subject) can be cast in countless metaphors. Let's try a physiological analogy. Let's assume that the cortex, the seat of consciousness, is a millionfold network of neurones, a fantastic computing machine. Cultural learning has imposed a few, pitifully small programs on the cortex. These programs may activate perhaps one tenth or one one-hundredth of the potential neural connections. All the learned games of life can be seen as programs which select, censor, alert and thus drastically limit the available cortical response (Mr. Aldous Huxley's reducing valves).

The CE (i.e., consciousness-expanding) drugs unplug these narrow programs. They unplug the ego, the game machinery, and the mind (that cluster of game concepts). And with the ego and mind unplugged, what is left? Not the "id"; no dark, evil impulses. These alleged negative "forces" are, of course, part of the game, being simply antirules. What is left is something that Western culture knows little about: the open brain, the uncensored cortex—alert and open to a broad sweep. Huxley and Dr. Barron have told you in their own words what is left, and there is no need to add my lumbering prose.

There is need, however, to ask another question. Why is this ecstatic, brain-opening experience so strange and horrid to Western culture? Why have our ancestors and our colleagues tended to ignore and even to oppose the visionary experience? Mr. R. Gordon Wasson, banker, mycologist, anthropologist, gentleman-scholar turned mystic, has traced the persecution of the divine and divinatory mushroom back through the millennia. Why the irrational fear so often aroused by research on CE drugs even to this day? Perhaps because our Western world is committed to overplaying the objective, external behavior game.

In particular we overvalue the mind—that flimsy collection

¹ Psilocybin is a synthetic of the active ingredients of the sacred mushroom of Mexico. The divinatory mushroom was introduced to the Western culture by Professor Roger Heim of Paris and R. Gordon Wasson of New York and synthesized by Dr. A. Hofmann of the Sandoz Laboratory in Basel, Switzerland, who is also known through his work on lysergic acid. We are grateful to Sandoz, Inc., for providing the research materials used in these studies.

of learned words and verbal connections; the mind, that system of paranoid delusions with the learned self as center. And we eschew the nonmind, nongame intuitive insight outlook which is the key to the religious experience, to the love experience.

We seem to oppose any process which puts the game of here and now onto the long evolutionary timetable. This is a natural opposition and a healthy one. It is the greatest game of "the game" versus the "nongame." Behavior versus consciousness. The universal brain-body versus the cultural mind. The ego versus the species. A dialogue old and holy, like the dialogue of sea against land.

But this old game should be made explicit if it is to be fun. Unfortunately, the West has no concepts for thinking and talking about this basic dialogue. There is no ritual for mystical experience, for the mindless vision. What should provoke intense and cheerful competition too often evokes suspicion, anger, and impatience. What can be holy and intensely educational in the action of CE drugs on the cortex finds no ritual for application. This is to me one of the greatest challenges of our times.

The nongame visionary experiences are, I submit, the key to behavior change—drug-induced *satori*. In three hours under the right circumstances the cortex can be cleared. The games that frustrate and torment can be seen in the cosmic dimension. But the West has no ritual, no game to handle the CE drug experience. In the absence of relevant rituals we can only impose our familiar games, the politics of the nervous system, the mind controlling the brain. Physicians seek to impose their game of control and prescription. The Bohemians naturally strive to impose their games of back-alley secrecy. The police, the third member of the happy, symbiotic drug triangle, naturally move in to control and prosecute.

Clearly we need new rituals, new goals, new rules, new concepts to apply and use these precious substances for man's welfare, to give the brain back to the species.

A group of investigators in the United States and Europe are now at work building up new games for the visionary experience, trying to develop new roles, rules, rituals, concepts and values. While these will, of course, vary from group to group the goal remains constant: expansion of consciousness, freedom of brain from the mind, freedom of the cortex from those centers—reticular (?), diencephalic (?), prefrontal (?)—

which control, alert, censor and select what the cortex attends to. The work has hardly begun. This much is clear. The theory of the new game will be simple and basic. Space and time will be among the few variables required. Human equality will be a central principle, for the mystic experience tells us that the game differences between men are infinitely small compared with the age-old species similarities.

In our research endeavors we have developed eleven egalitarian principles based on the game nature of the human contract: equality in determining role, rule, ritual, goal, language, commitment; equality in the explicit contractual definition of the real, the good, the true, the logical; equality of the right to speak and to have access to relevant information. Any contract between men should be explicit about any temporary suspension of these equalities.

This past year at the Center for Research in Personality, Harvard University, two research projects have attempted to put these egalitarian principles into operation. The first of these is a naturalistic study of drug-induced visions and the games which Americans impose on these new experiences. The second is a systematic study of the effects of consciousness-expanding drugs in a rehabilitation program. I hope that a description of these two projects will illustrate and clarify the preceding discussion.²

A Naturalistic Study of Psilocybin

The purpose of this study was to determine the effects of psilocybin when administered in a naturalistic, supportive set-

² The Director of the Center for Research in Personality, Prof. David C. McClelland, has provided these two projects with advice, support, and has labored to interpret our work to the non-visionary world. All American psychologists are indebted to Professor Henry A. Murray for his pioneer explorations into the human condition. From his neighborly presence, friendly interest and deep understanding of man's potentialities we have benefited. Dr. Frank Barron and Dr. Richard Alpert have been co-investigators in the mushroom research. Dr. W. Madison Presnell has lent psychiatric experience, administrative enthusiasm and clinical wisdom. George Litwin, James Ciarlo, Günther Weil, Ralph Metzner, Ralph Schwitzgebel and Jonathan Shay have played important roles in charting the new realms of consciousness. Edward Travers, John Molinski, James Maloney, Frank Rafferty, Rodney Harrington, Henry Kinney, and Donald Levine have made significant contributions to the Concord project. Mr. George Litwin and his staff have taken responsibility for the computer analysis of the questionnaire data. Mrs. Pearl Chan, research administrator, has made things run.

ting, to observe the rituals and language imposed by Americans on an experience quite alien to their culture. One hundred and sixty-seven subjects were given the mushrooms, 43 female and 124 male. Of these, 26 were internationally distinguished intellectuals, scholars, artists; 10 were medical doctors, 73 were professional intellectuals, 21 nonprofessional normals; 27 were drug addicts (psychological or physical), and 10 were inmates in a state prison.

The eleven principles for the human contract led to the following operations:

1. Participants alternated roles of observer and subject, i.e., the researchers took the drug with the subjects. The humanizing effect of this procedure cannot be overestimated. Among other things the subject-object issue is clearly settled.
2. Participants were given all available information about the drug. An atmosphere of mystery and secret experimentation was avoided.
3. Participants were given control of their own dosage. A maximum dosage was determined by the research team and this maximum number of tablets was given to the subject and he was free to dose himself at the rate and amount desired.
4. A comfortable, homelike environment was employed. The sterile impersonality of the laboratory was avoided.
5. Subjects were allowed to bring a relative or friend. No subject took the drug in a group where he was a stranger.

Three sets of data were obtained: questionnaires covering the reactions; written reports and tape recordings; observations by the research team.

While the results of this study are too extensive to summarize at this point, a few major conclusions can be stated: The psilocybin experience is pleasant and educational; seventy-three percent of our subjects reported the experience as "very pleasant" or ecstatic; ninety-five percent thought the experience had changed their lives for the better.

Three out of four subjects reported happy and insightful reactions. When we recall that the drug was given only once under informal circumstances, with no attempt to be therapeutic or problem-oriented, these data stimulate thoughts about the healing-educational possibilities of psilocybin. But how do these changes come about?

The most common reaction reported is the sudden perception of the effect of abstractions, rituals, learned-game rou-

tines—ecstatic pleasure at being temporarily freed from these limitations, a game-free honesty. Set and suggestive contexts account for ninety-nine percent of the specific response to the drug. Thus, you cannot sensibly talk about the effects of psilocybin. It's always the set and suggestive context triggered off by the drug. A fascinating tension between these two factors—set and context—inevitably develops. If both are positive and holy then a shatteringly sacred experience results. If both are negative then a hellish encounter ensues. There is, of course, the tendency for people to impose their familiar games on to the psilocybin experience. The more rigidly committed to the game, the stronger this tendency. If the drug-giving person is secure, flexible, supportive, then the experience is almost guaranteed to be pleasant and therapeutic. Intensely deep communication occurs. Deep insights of a personal, social, and philosophic nature take place.

The Use of Psilocybin in a Rehabilitation Program

For many people one or two psilocybin experiences can accomplish the goals of a long and successful psychotherapy, a deep understanding and game-free collaboration between participants plus insight. But what then? People vary tremendously in their readiness to move forward from this point. Many of the 167 subjects in our naturalistic study were able to exploit the close, honest relationship and the insight. They were already involved in rewarding games to which they could return with renewed vision and energy.

But many of our subjects came through the psilocybin experience with the knowledge that they were involved in non-rewarding games, caught in routines which they disliked. Some realized that they had no games they wanted to play. The "therapeutic" effect of the experience did not last for these subjects. Expanded consciousness narrowed back. They were left with pleasant memories of their visionary journey and nothing more.

After insight comes the deeper question as to the meaning of life: What games to play? Behavior change must follow change in consciousness.

Our research group is now committed to a series of investigations which seek to develop methods of perpetuating the positive effects of the psilocybin experience, methods for help-

ing the subject select and learn new games which give meaning to life.

The first of these projects concerned itself with the rehabilitation of inmates in a state prison. In helping prisoners we have of course found that the prisoners have rehabilitated us—changed our notions about crime, punishment, taught us about their games, made us see the limitations of our middle-class conceptions, expanded our consciousness and given deeper meaning to our lives.

Ten volunteer prisoners. A maximum security prison. The recidivism rate is eighty percent. Eight of the ten would be expected back in prison a year after release. In baseball terms, eighty percent is the error percentage our team attempted to lower.

After three orientation meetings with the prisoners, the drug was given. I was the first one to take the drug in that bare hospital room behind barred windows. Three inmates joined me. Two psychologists and the other inmates served as observers—taking the drug three hours later. The psilocybin session was followed by three discussions, then another drug session, then more discussions. At this point the inmates had taken the drug an average of four times. There had been not one moment of friction or tension in some forty hours of egoless interaction. Pre-post testing has demonstrated marked changes on both objective and projective instruments: dramatic decreases in hostility, cynicism, depression, schizoid ideation; definite increases in optimism, planfulness, flexibility, tolerance, sociability.

The group has become a workshop for planning future games. Some prisoners are being trained to take over the functions of research assistants. They are performing the tasks of a vocational guidance clinic—preparing occupational brochures for inmates about to be released, making plans to act as rehabilitation workers after their release, for organizing a halfway house for ex-convicts. Other prisoners are using their time to prepare for the games to which they will return—the family game, their old job.

The psilocybin experience made these men aware of the stereotyped games in which they had been involved, the game of "cops and robbers," the game of being a tough guy, the game of outwitting the law, the game of resentful cynicism. "My whole life came tumbling down and I was sitting happily

in the rubble." But insight is the beginning, and the more demanding task is to help these men choose new games, help them learn the rules, the roles, the concepts, the rituals of the new game—practical, collaborative reality education. Of course, this phase of our work requires help from others. But the helpers get helped. The businessmen who help our inmates get jobs are invited into a new and exciting game which gives more meaning to their lives.

Our work progresses slowly and against strong opposition. Our new game of allowing criminals to take over responsibility and authority and prestige as experts on "crime and rehabilitation" brings us into game competition with the professional middle class. Anger and anxiety is aroused. Society has always produced and needed a criminal class. When criminals drop their roles and begin to play a different game, incredulous panic can ensue. Can society play its game without some men acting the part of criminals? If criminals are no longer criminals, where do the rest of us stand? The game of rehabilitator and client (i.e., a professional and a criminal) is being threatened. People are upset when their games are changed.

But our new game has begun. The game statistic for measuring success is clearcut. Eighty percent of convicts return to prison. Next season will reveal how well we have played our game.

Summary

Let me summarize. We have been concerned with change in behavior and change in consciousness. It is considerably easier to change behavior if you understand the learned-game nature of behavior. This sort of insight can be brought about by the administration of consciousness-expanding drugs, of which psilocybin is the most effective. But insight must be followed by behavior change. In the "rehabilitation game" we have been developing, the role of the helper is threefold. He provides a serious, supportive context for the CE experience, sets up an atmosphere in which insight can quickly occur. He then joins with the subject in an all-out collaborative process of selecting and mastering new games. He keeps accurate records of his activities and those of his subjects so that the success of his game performance can be objectively appraised by his fellow men.

A final word of clarification: Those of us who talk and write

about the games of life are invariably misunderstood. We are seen as frivolous, or cynical anarchists tearing down the social structure. This is an unfortunate misapprehension. Actually, only those who see culture as a game, only those who take this evolutionary point of view can appreciate and treasure the exquisitely complex magnificence of what human beings do and have done. To see it all as "serious, taken-for-granted reality" is to miss the point, is to derogue with bland passivity the greatness of the games we learn.

Those of us who play the game of "applied mysticism" respect and support good gamesmanship. You pick out your game. You learn the rules, rituals, concepts. You play fairly and cleanly. You don't confuse your games with other games. You do not impose your game rituals on others' games. You win today's game with humility. You lose tomorrow's game with dignity. Anger and anxiety are irrelevant because you see your small game in the context of the great evolutionary game which no one can win and no one can lose.

6. A PSYCHEDELIC EXPERIENCE: FACT OR FANTASY?

ALAN WATTS

Since at least 1500 B.C. men have, from time to time, held the view that our normal vision of the world is a hallucination—a dream, a figment of the mind, or, to use the Hindu word which means both art and illusion, a *maya*. The implication is that, if this is so, life need never be taken seriously. It is a fantasy, a play, a drama to be enjoyed. It does not really *matter*, for one day (perhaps in the moment of death) the illusion will dissolve, and each one of us will awaken to discover that he himself is *what* there is and *all* that there is—the very root and ground of the universe, or the ultimate and eternal space in which things and events come and go.

This is not simply an idea which someone "thought up," like science fiction or a philosophical theory. It is the attempt to express an experience in which consciousness itself, the basic sensation of being "I," undergoes a remarkable change. We do not know much about these experiences. They are relatively common, and arise in every part of the world. They occur to both children and adults. They may last for a few seconds and come once in a lifetime, or they may happen repeatedly and constitute a permanent change of consciousness. With baffling impartiality they may descend upon those who never heard of them, as upon those who have spent years trying to cultivate them by some type of discipline. They have been regarded, equally, as a disease of consciousness with symptoms everywhere the same, like measles, and as a vision of higher reality such as comes in moments of scientific or psychological insight. They may turn people into monsters and megalomaniacs, or transform them into saints and sages. While there is no sure way of inducing these experiences, a favorable atmosphere may

be created by intense concentration, by fasting, by sensory deprivation, by hyper-oxygenating, by prolonged emotional stress, by profound relaxation, or by the use of certain drugs.

Experiences of this kind underlie some of the great world religions—Hinduism, Buddhism and Taoism in particular, and, to a much lesser extent, Judaism, Christianity, and Islam. As expressed in the doctrines of these religions, they purport to be an account of "the way things are" and therefore invite comparison with descriptions of the universe and of man given by physicists and biologists. They contradict common sense so violently and are accompanied with such a powerful sense of authenticity and reality (*more* real than reality is a common description) that men have always wondered whether they are divine revelations or insidious delusions.

This problem becomes all the more urgent now that the general public has become aware that experiences of this type are available, with relative ease, through the use of such chemicals as the so-called psychedelic drugs—LSD-25, mescaline, psilocybin, hashish, and marijuana, to name only the better known. The reality status of the modes of consciousness induced by these chemicals becomes, then, a matter of most serious concern for the guardians of our mental health, for psychiatrists and psychologists, philosophers and ministers, for every scientific investigator of the nature of consciousness, and, above all, for a large section of the general public curious and eager to get "the experience" for reasons of all kinds.

A proper study of the question runs, at the very beginning, into two obstacles. The first is that we know very little indeed about the structure and chemistry of the brain. We do not know enough of the ways in which it gleans information about the outside world and about itself to know whether these chemicals help it (as lenses help the eyes) or confuse it. The second is that the nature and use of these chemicals is surrounded with an immense semantic fog, whose density is increased by people who ought to know better. I mean psychiatrists.

What we know, positively and scientifically, about psychedelic chemicals is that they bring about certain alterations of sense perception, of emotional level and tone, of identity feeling, of the interpretation of sense data, and of the sensations of time and space. The nature of these alterations depends on three variables: the chemical itself (type and dosage), the

psycho-physiological state of the subject, and the social and aesthetic context of the experiment. Their physiological side effects are minimal, though there are conditions (e.g., disease of the liver) in which some of them may be harmful. They are not physiologically habit-forming in the same way as alcohol and tobacco, though some individuals may come to depend upon them for other (i.e., "neurotic") reasons. Their results are not easily predictable since they depend so largely upon such imponderables as the setting, and the attitudes and expectations of both the supervisor and the subject. The (enormous) scientific literature on the subject indicates that a majority of people have pleasant reactions, a largish minority have unpleasant but instructive and helpful reactions, while a very small minority have psychotic reactions lasting from hours to months. It has never been definitely established that they have led directly to a suicide. (I am referring specifically here to LSD-25, mescaline, the mushroom derivative psilocybin, and the various forms of *cannabis*, such as hashish and marijuana.)

Thus what we know for certain implies that these chemicals cannot be used without caution. But this applies equally to antibiotics, whiskey, household ammonia, the automobile, the kitchen knife, electricity, and matches. No worthwhile life can be lived without risks, despite current American superstitions to the contrary—as that passing laws can prevent people from being immoral and that technological power can be made fool-proof. The question is therefore whether the risks involved in using these chemicals are worthwhile, and it seems to me that what is worthwhile should be judged not only in terms of useful knowledge or therapeutic effect, but also in terms of simple pleasure. (I have heard addiction to music described in just the same vocabulary as addiction to drugs.) If it turns out that psychedelics offer valid ways of exploring man's "inner world," the hidden ways of the mind and brain, we should surely admit that new knowledge of this inmost frontier may be worth quite serious risks. Psychoses and compulsive delusions are, after all, no more dangerous than the Indians and the mountain ranges that stood in the way of the first settlers of the American West.

Psychiatrists often wonder why colleagues in other branches of medicine and specialists in other fields of science do not take them quite seriously. A typical reason may be found in their haste to define the nature and effects of these chemicals

in terms which are simply prejudicial, and which boil down to nothing more than gobbledegook with an authoritative rumble. For example, the chemicals in question are commonly classified as "hallucinogenics" or "psychotomimetics." The first word means that they generate hallucinations, and the second that their effects resemble, or mimic, certain forms of psychosis or insanity. Only rarely do they give the impression of events in the external world which are not actually happening (i.e., hallucinations) and the ten-year-old notion that they induce "model psychoses" such as temporary schizophrenia has long been abandoned by those who are still in active research. But even if these findings were to be contested, the words "hallucination" and "psychosis" are loaded: they designate *bad* states of mind, whereas a clean scientific language should say only that these chemicals induce different and unusual states of mind.

It is almost a standard joke that psychiatry has pejorative or "put-down" words for every human emotion, as "euphoric" for happy, "fixated" for interested, and "compulsive" for determined. The discussion of psychedelic chemicals, both in the scientific literature and the public press, is thoroughly swamped with question-begging language of this kind in articles that purport to be impartial and authoritative. Right from the start the very word "drug," when used in this connection, evokes the socially reprehensible image of people who are "drugged" or "doped"—glassy-eyed, staggering, or recumbent wrecks of humanity, withdrawn from reality into a diabolical paradise of bizarre or lascivious dreams. The image of the Fu Manchu opium den, with screaming meemies at the end of the line.

Thus it is most common to find the action of the psychedelics called "toxic" (i.e., poisonous), and the sensory and emotional changes induced referred to as "distortions," "delusive mechanisms," "dissociations," and "regressions," or as "loss of ego structure" and "abnormal perception of body image." This is the language of pathology. Used without explicit qualification, it implies that a consciousness so changed is sick. Likewise, when—in the context of a scientific article—the writer reports, "Subjects experienced religious exaltation, and some described sensations of being one with God," and leaves it at that, the implication is plainly that they went crazy. For in our own culture, to feel that you are God is insanity almost by definition. But, in Hindu culture, when someone says, "I have just

found out that I am God," they say, "Congratulations! You at last got the point." Obviously, the word "God" does not mean the same thing in both cultures. Yet psychiatrists toss off such utterly damning remarks without scruple, and feel free to use their diagnostic jargon of mental pathology for states of consciousness which many of them have never even bothered to experience. For they expect to get accurate information about these states from subjects untrained in scientific description, fearing that if they themselves entered into any new mode of consciousness it would impair their scientific objectivity. This is pure scholasticism, as when the theologians said to Galileo, "We will not look through your telescope because we already know how the universe is ordered. If your telescope were to show us anything different, it would be an instrument of the devil."

Similarly, so many practitioners of the inexact sciences (e.g., psychology, anthropology, sociology) let it be known most clearly that they already know what reality is, and therefore what sanity is. For these poor drudges reality is the world of nonpoetry: it is the reduction of the physical universe to the most banal and dessicated terms conceivable, in accordance with the great Western myth that all nature outside the human skin is a stupid and unfeeling mechanism. There is a sort of "official psychiatry" of the army, state mental hospital, and of what, in California, they call "correctional facility" (i.e., prison), which defends this impoverished reality with a strange passion.

To come, then, to any effective evaluation of these chemicals and the changed states of consciousness and perception which they induce, we must begin with a highly detailed and accurate description of what they do, both from the standpoint of the subject and of the neutral observer, despite the fact that in experiments of this kind it becomes startlingly obvious that the observer cannot be neutral, and that the posture of "objectivity" is itself one of the determinants of the outcome. As the physicist well knows, to observe a process is to change it. But the importance of careful description is that it may help us to understand the kind of level of reality upon which these changes in consciousness are taking place.

For undoubtedly they are happening. The dancing, kaleidoscopic arabesques which appear before closed eyes are surely an observation of *some* reality, though not, perhaps, in the

physical world outside the skin. But are they rearranged memories? Structures in the nervous system? Archetypes of the collective unconscious? Electronic patterns such as often dance on the TV screen? What, too, are the fernlike structures which are so often seen—the infinitude of branches upon branches upon branches, or analogous shapes? Are these a glimpse of some kind of analytical process in the brain, similar to the wiring patterns in a computer? We really have no idea, but the more carefully observers can record verbal descriptions and visual pictures of these phenomena, the more likely that neurologists or physicists or even mathematicians will turn up the physical processes to which they correspond. The point is that these visions are not *mere* imagination, as if there had ever been anything mere about imagination! The human mind does not just perversely invent utterly useless images out of nowhere at all. Every image tells us something about the mind or the brain or the organism in which it is found.

The effects of the psychedelics vary so much from person to person and from situation to situation that it is well nigh impossible to say with any exactitude that they create certain particular and invariable changes of consciousness. I would not go so far as to say that the chemical effects are simply featureless, providing no more than a vivid mirror to reflect the fantasies and unconscious dispositions of the individuals involved. For there are certain types of change which are usual enough to be considered characteristic of psychedelics: the sense of slowed or arrested time, and the alteration of "ego boundary"—that is, of the sensation of one's own identity.

The feeling that time has relaxed its pace may, to some extent, be the result of having set aside the better part of a day just to observe one's own consciousness, and to watch for interesting changes in one's perception of such ordinary things as reflected sunlight on the floor, the grain in wood, the texture of linen, or the sound of voices across the street. My own experience has never been of a distortion of these perceptions, as in looking at oneself in a concave mirror. It is rather that every perception becomes—to use a metaphor—more resonant. The chemical seems to provide consciousness with a sounding box, or its equivalent, for all the senses, so that sight, touch, taste, smell, and imagination are intensified like the voice of someone singing in the bathtub.

The change of ego boundary sometimes begins from this

very resonance of the senses. The intensification and "deepening" of color, sound and texture lends them a peculiar transparency. One seems to be aware of them more than ever as vibration, electronic and luminous. As this feeling develops it appears that these vibrations are continuous with one's own consciousness and that the external world is in some odd way inside the mind brain. It appears, too, with overwhelming obviousness, that the inside and the outside do not exclude one another and are not actually separate. They go together; they imply one another, like front and back, in such a way that they become polarized. As, therefore, the poles of a magnet are the extremities of a single body, it appears that the inside and the outside, the subject and the object, the self and the world, the voluntary and the involuntary, are the poles of a single process which is my real and hitherto unknown self. This new self has no location. It is not something like a traditional soul, using the body as a temporary house. To ask *where* it is, is like asking where the universe is. Things in space have a where, but the thing that space is in doesn't need to be anywhere. It is simply what there is, just plain basic isness!

How easily, then, an unsophisticated person might exclaim, "I have just discovered that I am God!" Yet if, during such an experience, one retains any critical faculties at all, it will be clear that anyone else in the same state of consciousness will also be God. It will be clear, too, that the "God" in question is not the God of popular theology, the Master Technician who controls, creates, and understands everything in the universe. Were it so, a person in this state should be able to give correct answers to all questions of fact. He would know the exact height of Mount Whitney in millimeters. On the other hand, this awareness of a deeper and universal self would correspond exactly with that other type of God which mystics have called the "divine ground" of the universe, a sort of intelligent and super-conscious space containing the whole cosmos as a mirror contains images . . . though the analogy fails in so far as it suggests something immense: we cannot picture sizelessness.

Anyone moving into completely unfamiliar territory may at first misunderstand and misinterpret what he sees, as is so evident from the first impressions of visitors to foreign lands where patterns of culture differ radically from their own. When Europeans depicted their first impressions of China, they made the roofs of houses exaggeratedly curly and people's eyes

slanted at least 45 degrees from the horizontal. Contrariwise, the Japanese saw all Europeans as redhaired, sunken-eyed goblins with immensely long noses. But the unfamiliarities of foreign cultures are nothing to those of one's own inner workings. What is there in the experience of clear blue sky to suggest the structure of the optical nerves? Comparably, what is there in the sound of a human voice on the radio to suggest the formation of tubes and transistors? I raise this question because it is obvious that any chemically induced alteration of the nervous system must draw the attention of that system to itself. I am not normally aware that the sensation of blue sky is a state of the eyes and brain, but if I see wandering spots that are neither birds nor flying saucers, I know that these are an abnormality within the optical system itself. In other words, I am enabled, by virtue of this abnormality, to become conscious of one of the instruments of consciousness. But this is most unfamiliar territory.

Ordinarily, we remain quite unaware of the fact that the whole field of vision with its vast multiplicity of colors and shapes is a state of affairs inside our heads. Only eyes within a nervous system within a whole biological organism can translate the particles and/or waves of the physical world into light, color and form, just as only the skin of a drum can make a moving hand go "Boom!" Psychedelics induce subtle alterations of perception which make the nervous system aware of itself, and the individual suddenly and unaccustomedly becomes conscious of the external world as a state of his own body. He may even go so far as to feel a confusion between what other people and things are doing, on the one hand, and his own volition, on the other. The particular feeling, or "cue," attached to thoughts and actions normally understood to be voluntary may then be attached to what is ordinarily classified as involuntary. (Similarly, in *déjà vu* or "hasn't-this-happened-before?" experiences, perceptions of the immediate here and now come through with the cue or signal usually attached to memories.)

Under such circumstances the naive observer might well take these impressions so literally as to feel that the universe and his own body are *in fact* one and the same, that he is willing everything that happens, and that he is indeed the God of popular theology. If that were all, the psychedelics might certainly be dismissed as hallucinogens. We might conclude that

they merely confuse the "wiring" of the nervous system in such a way that volition or "I-am-doing-this" signals get mixed up with messages about the external world.

Yet the problem cannot be set aside so simply. Let us suppose that a biologist wants to make a very detailed and accurate description of the behavior of some particular organism, perhaps of a sea bird feeding on the beach. He will be unable to describe the behavior of the bird without also describing the behavior of the water, of the sandworms or shellfish which the bird is eating, of seasonal changes of tide, temperature, and weather, all of which go together with the behavior of the bird. He cannot describe the behavior of the organism without also describing the behavior of its environment. We used to attribute this to the fact that organisms are always reacting to things that happen in their environments, and are even determined by their environments in all that they do. But this is to speak as if things were a collection of perfectly separate billiard balls banging against one another. Today, however, the scientist tends more and more to speak of the behavior of the organism and the behavior of the environment as the behavior of a single "field," somewhat awkwardly named the "organism/environment." Instead of talking about actions and reactions between different things and events, he prefers to speak of transactions. In the transaction of buying and selling, there is no selling unless there is simultaneously buying, and *vice versa*. The relation of organism to environment is also considered a transaction, because it has been found that living creatures exist only in a balanced relationship to one another. The present natural state of this planet "goes with" the existence of human beings, just as buying goes with selling. In any radically different environment, man could survive only by becoming a different type of being.

The implications of this organism/environment relationship are somewhat startling, for what is really being said is this: The entity we are describing is not an organism *in* an environment; it is a unified field or process, because it is more simple and more convenient to think of what the organism does and what the environment does as a single "behavior." Now substitute for "entity we are describing" the idea of the self. I myself am not just what is bounded by my skin. I myself (the organism) am what my whole environmental field (the universe) is doing. It is, then, simply a convention, a fashion, an

arbitrary social institution, to confine the self to some center of decision and energy located within this bag of skin. This is no more than the rule of a particular social game of cops and robbers, that is, of who shall we praise and reward, and who shall we blame and punish? To play this game, we pretend that the origin of actions is something inside each human skin. But only force of long ingrained habit makes it hard to realize that we could define and actually *feel* ourselves to be the total pattern of the cosmos as focused or expressed *here*. This would be a sense of our identity consistent with the scientific description of man and other organisms. It would involve, too, the sensation that the external world is continuous with and one with our own bodies—a sensation very seriously needed in a civilization where men are destroying their environment by misapplied technology. This is the technology of man's *conquest* of nature, as if the external world were his enemy and not the very matrix in which he is brought forth and sustained. This is the technology of the dust bowls, of polluted air, poisoned streams, chemical chickens, pseudo-vegetables, foam-rubber bread, and the total Los Angelization of man.

Yet how is this long-ingrained sense of insular identity to be overcome? How is twentieth-century man to gain a feeling of his existence consistent with twentieth-century knowledge? We need very urgently to know that we are not strangers and aliens in the physical universe. We are not dropped here by divine whim or mechanical fluke out of some other universe altogether. We did not arrive, like birds on barren branches; we grew out of this world, like leaves and fruit. Our universe "humans" just as a rosebush "flowers." We are living in a world where men all over the planet are linked by an immense network of communications, and where science has made us theoretically aware of our interdependence with the entire domain of organic and inorganic nature. But our ego-feeling, our style of personal identity, is more appropriate to men living in fortified castles.

There seems to me a strong possibility that the psychedelics (as a medicine rather than a diet) may help us to "trigger" a new sense of identity, providing the initial boost to get us out of the habit of restricting "I" to a vague center within the skin. That they make us aware that our whole knowledge of the external world is a state of our own bodies is not a merely technical and trivial discovery. It is the obverse of the fact that

our own bodies are functions, or behaviors, of the whole external world. This—at first—weird and mystical sensation of "unity with the cosmos" has been objectively verified. The mystic's subjective experience of his identity with "the All" is the scientist's objective description of ecological relationship, of the organism/environment as a unified field.

Our general failure (over the past three thousand years of human history) to notice the inseparability of things, and to be aware of our own basic unity with the external world, is the result of specializing in a particular kind of consciousness. For we have very largely based culture and civilization on concentrated attention, on using the mind as a spotlight rather than a floodlight, and by this means analyzing the world into separate bits. Concentrated attention is drummed into us in schools; it is essential to the three R's; it is the foundation of all careful thought and detailed description, all high artistic technique and intellectual discipline. But the price we pay for this vision of the world in vivid detail, bit by bit, is that we lose sight of the relationships and unities between the bits. Furthermore, a form of attention which looks at the world bit by bit doesn't have time to examine all possible bits; it has to be programmed (or prejudiced) to look only at *significant* bits, at things and events which are relevant to certain preselected ends—survival, social or financial advancement, and other fixed goals which exclude the possibility of being open to surprises, and to those delights which are extra special because they come without being sought.

In my own experience, which is shared by very many others, the psychedelics expand attention. They make the spotlight of consciousness a floodlight which not only exposes ignored relationships and unities but also brings to light unsuspected details—details normally ignored because of their lack of significance, or their irrelevance to some prejudice of what ought to be. (For example, the tiniest hairs on people's faces and blotchy variations of skin color, not really supposed to be there, become marvellously visible.) There is thus good reason to believe that the psychedelics are the opposite of hallucinogens insofar as they decrease the selectivity of the senses and expose consciousness to events beyond those that are supposed to deserve notice.

Time after time, this unprogrammed mode of attention, looking *at* things without looking *for* things, reveals the un-

believable beauty of the everyday world. Under the influence of programmed attention, our vision of the world tends to be somewhat dusty and drab. This is for the same reason that *staring* at things makes them blurred, and that trying to get the utmost out of a particular pleasure makes it something of a disappointment. Intense beauty and intense pleasure are always gratuitous, and are revealed only to senses that are not seeking and straining. For our nerves are not muscles; to push them is to reduce their efficiency.

What, finally, of the strong impression delivered both by the psychedelics and by many forms of mystical experience that the world is in some way an illusion? A difficulty here is that the word "illusion" is currently used pejoratively, as the negative of everything real, serious, important, valuable, and worthwhile. Is this because moralists and metaphysicians are apt to be personality types lacking the light touch? Illusion is related etymologically to the Latin *ludere*, to play, and thus is distinguished from reality as the drama is distinguished from "real life." In Hindu philosophy, the world is seen as a drama in which all the parts—each person, animal, flower, stone, and star—are roles or masks of the one supreme Self, which plays the *lila* or game of hide and seek with itself for ever and ever, dismembering itself as the Many and remembering itself as the One through endless cycles of time, in the spirit of a child tossing stones into a pond through a long afternoon in summer. The sudden awakening of the mystical experience is therefore the one Self remembering itself as the real foundation of the seemingly individual and separate organism.

Thus the Hindu *maya*, or world illusion, is not necessarily something bad. *Maya* is a complex word signifying the art, skill, dexterity, and cunning of the supreme Self in the exercise of its playful, magical, and creative power. The power of an actor so superb that he is taken in by his own performance. The God-head amazing itself, getting lost in a maze.

Classical illustrations of *maya* include the apparently continuous circle of fire made by a whirling torch, and of the continuity of time and moving events by the whirring succession of *ksana*, or atomic instants. Physicists use similar metaphors in trying to explain how vibrating wavicles produce the illusion of solid material. The impenetrability of granite, they say, is something like the apparently solid disk made by the blades of an electric fan: it is an intensely rapid motion of the

same minute orbits of light that constitute our fingers. Physics and optics have also much to say about the fact that all reality, all existence is a matter of relationship and transaction. Consider the formula

$$\frac{a}{c} = b \quad = \text{Rainbow},$$

where a is the sun, b is moisture in the atmosphere, and c is an observer, all three being at the same time in a certain angular relationship. Deduct any one term, a , b or c , or arrange them in positions outside the correct angular relationship, and the phenomenon "rainbow" will not exist. In other words, the actual existence of rainbows depends as much upon creatures with eyes as it depends upon the sun and moisture in the atmosphere. Common sense accepts this in respect to diaphanous things like rainbows which back off into the distance when we try to reach them. But it has great difficulty in accepting the fact that chunky thinks like apartment buildings and basic things like time and space exist in just the same way—only in relation to certain structures known as organisms with nervous systems.

Our difficulty in accepting for ourselves so important a part in the actual creation or manifestation of the world comes, of course, from this thorough habituation to the feeling that we are strangers in the universe—that human consciousness is a fluke of nature, that the world is an external object which we confront, that its immense size reduces us to pitiful unimportance, or that geological and astronomical structures are somehow more real (hard and solid?) than organisms. But these are actually mythological images of the nineteenth and early twentieth centuries—ideas which, for a while, seemed extremely plausible, mostly for the reason that they appeared to be hardboiled, down to earth and toughminded, a currently fashionable posture for the scientist. Despite the lag between advanced scientific ideas and the common sense of even the educated public, the mythology of man as a hapless fluke trapped in a mindless mechanism is breaking down. The end of this century may find us, at last, thoroughly at home in our own world, swimming in the ocean of relativity as joyously as dolphins in the water.

7. A REVIEW OF THE CLINICAL EFFECTS OF PSYCHOTOMIMETIC AGENTS *

HUMPHRY OSMOND, D.P.M.

The Psychotomimetic Agents

We are using Gerard's (25) term "psychotomimetics" generically for compounds that have been called schizogens, psychotica, psychotogens, phantastica, hallucinogens, and elixirs. If one believes that the importance of these compounds lies in their capacity to mimic the mental illnesses called psychoses, psychotomimetics would be the term of choice. This capacity alone would make these drugs the focus of psycho-pharmacological inquiry, but this capacity is not their only, nor even, perhaps, their most important quality. It is but recently that the relationship between psychotomimetics and schizophrenia has become somewhat clearer. Later in this presentation I shall suggest a more inclusive term.

We are the latest of generations of experimenters who, from before the dawn of history, in every part of the world, have sought for means by which man could alter, explore, and control the workings of his own mind, thus enlarging his experience of the universe. Until recently, however, science has shown only sporadic interest in these matters.

Since there are few substances that, in large enough doses, will not produce changes in body and mind resembling some mental illness, I shall try to limit our field of inquiry by a definition that will prevent workers in this field from being over-

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whelmed with an inconveniently large portion of the pharmacopoeia. This definition will be improved, and I make it in order to provoke such improvement: "Psychotomimetic agents are substances that produce changes in thought, perception, mood and, sometimes, in posture, occurring alone or in concert, without causing either major disturbances of the autonomic nervous system or addictive craving, and although, with overdosage, disorientation, memory disturbance, stupor, and even narcosis may occur, these reactions are not characteristic."

This rough and ready guide excludes morphine, cocaine, atropine, and their derivatives. It also excludes anesthetics, analgesics, and hypnotics. I expect, however, that there will still be some overlapping of these divisions. Using this guide we have a sizable list, starting with the still-unidentified soma (21) imported from central Asia into India several thousand years ago and ending with 3, 4, 5, trimethoxyphenyl-B-amino-propane (TMA), (55), bufotenine (73), adrenochrome (31), and adrenolutin (34, 53), whose qualifications for inclusion in this classification are still being examined. As I list these treasures of 5,000 years of perilous and sometimes fatal searching, think upon those nameless discoverers and rediscovered, Aztec and Assassin, Carib and Berserker, Siberian and Red Indian, Brahmin and African, and many others of whose endeavors even scholars do not know. We inherit their secrets and profit by their curiosity, their courage, and even from their errors and excesses. Let us honor them. They do not appear in any list of references.

There are such substances as soma, hashish, cohoba, ololiuqui, peyote, the Syrian rue, the caapi vine, the fungus teonanacatl, the two Amanitas, *pantherina* and *muscaria*, the iboga bean, and the fierce virola snuff obtained from a nutmeglike tree in Amazonia. Who knows what other compounds await the keen inquiries of ethnobotanists such as R. E. Schultes or mycologists such as Gordon Wasson?

With our modern synthetics we are a little safer, though the ground quakes beneath us. These synthetics include mescaline (28), introduced by Heffter in 1896, the first, I believe, of these agents to be synthesized; harmine or telepathine (54), an alluring name whose significance I have never understood; Hofmann's (70) astonishing lysergic acid diethylamide (LSD), whose great activity has made homeopathy seem less im-

probable; hashish, whose active principles should surely be studied; TMA, synthesized by Scott and his co-workers of Imperial Chemicals Ltd., Manchester, England, a synthetic that lies in an area intermediate between mescaline and Amphetamine and has recently been the subject of a report by J. R. Smythies; bufotenine, isolated from cohoba, a West Indian snuff; unstable adrenochrome; and the subtle adrenolutin. What an array of substances for daring inquiry! What work for generations to come!

We know little enough about the most familiar of these agents, and there are only vague correlations between the physical and mental changes that they cause. Considering their interest to medicine alone, our lack of information is disquieting, but they are of more than medical significance. They reach out to psychology (50, 64), sociology (56), philosophy (66), art (58, 75), and even to religion (37, 38, 65). Surely we are woefully ignorant of these agents and this ignorance must be remedied.

To clinicians such as myself who daily encounter those crippling illnesses that confine hundreds of thousands of unhappy people to dismal and obsolete institutions flattered by the name of hospital, publication of a monograph such as this one is heartening. Perhaps it means that apathy and neglect are ending, and we may have a chance to apply the immense but often unused knowledge that we already possess regarding the care of the mentally ill, and that we shall get encouragement and support to seek for even more.

In What Way Are These Substances Important?

Nearly everyone who works with psychotomimetics and allied compounds agrees there is something special about them. Such words as "unforgettable" and "indescribable" abound in the literature. Few workers, however, have emphasized that the unique qualities of these substances must be investigated in many directions at the same time, a consideration that makes work in this field all the more difficult. I shall try to remedy this deficiency by citing several reasons for ascribing importance to them, although in the attempt I am sure to show my scientific shortcomings and imaginative limitations.

(1) The primary interest of these drugs for the psychiatrist lies in their capacity to mimic more or less closely some as-

pects of grave mental illnesses, particularly of schizophrenia. The fact that medical men have been preoccupied with transient states resembling mental illnesses that have been called model psychoses, however, does not mean that the only use for these compounds is in the study of pathological conditions. This misunderstanding, unless corrected, can deprive us of much knowledge and prevent the growth of new and fascinating researches. Model psychoses allow us to correlate human experience with animal behavior. We can learn how to aggravate and alleviate these model illnesses, and thus we can devise "model therapies" that may later have wider application.

(2) Psychiatrists have found that these agents have a place in psychotherapy. This practice may sound like carrying the idea of "a hair of the dog that bit you" rather far, but it seems to be justified.

(3) Another potentiality of these substances is their use in training and in educating those who work in psychiatry and psychology, especially in understanding strange ways of the mind.

(4) These drugs are of value in exploring the normal mind under unusual circumstances.

(5) Last, but perhaps most important, there are social, philosophical, and religious implications in the discoveries made by means of these agents. To inquire more than superficially into any one of them would require more time than I have available and more knowledge and wisdom than I possess.

The Model Psychoses

Over a century ago B. A. Morel, according to Ellenberger (14), used hashish to show his students the sort of world that might be endured by some mentally ill people. It is remarkable how ignorant we still are as to the best way to conduct such experiments. We still do not know for certain the exact differences between experiences produced by, for example, hashish, and those produced by peyote, peyote and mescaline, or mescaline and LSD. Of course such comparisons have been made, but I know of none that has taken into account obvious variables such as body type, height and weight, or skin and eye color, yet alone subtle personality or cultural, social, and biochemical factors that may be very important. We are

still unsure whether these substances differ quantitatively or qualitatively. Our work with ololiuqui (53), adrenochrome (31), and adrenolutin (34, 53) has caused me to suspect that these drugs are qualitatively different from mescaline and LSD. The Aztecs who first used ololiuqui held the same opinion. I have had a few reports of the results obtained from using mixtures of these drugs, but I am unaware of any established facts about them.

From all accounts (15, 45, 65), the cactus peyote is unpleasant to take, with the result that the isolation and synthesis of mescaline by Heffter (28) encouraged more work to be done. Beringer (6), Rouhier (59), Klüver (45), G. Tayleur Stocking (72), Mayer-Gross (49), and Paul Hoch (30) should be mentioned in this connection. The introduction by Hofmann (69) of LSD and subsequent investigation of this compound by Stoll (71) added an immensely potent weapon to our armory. The minute concentration of it required to produce its effect and the fact that, according to Cerletti (10), most of the drug is excreted from the body within one hour while its effects last twelve hours or more is an unsolved mystery. How does the drug continue to act although it is no longer present?

Among many excellent papers on LSD, apart from Stoll's (71) original reports, observations by Rinkel, Hyde, and Solomon (57) and by Anderson and Rawnsley (2) are outstanding.

It is curious that in the lengthy and sometimes heated discussions about the relationship of model psychoses to schizophrenia that smoldered for nearly fifty years, not until 1951 (52) was the difference between a transient, artificially induced, experimental state in a volunteer under laboratory conditions, and the prolonged, insidious, creeping illness in an unsuspecting victim whose social life progressively atrophied, clearly recognized.

There is one golden rule that should be applied in working with model psychoses. One should start with oneself. Unless this is done, one cannot expect to make sense of someone else's communications and, consequently, the value of the work is greatly reduced. Stefaniuk (68) told me how much his attitude changed after he had himself taken LSD during the course of a series of experiments.

I am still unsure in what way patients should participate in

these investigations. Rinkel (58) has observed that mentally ill patients can be made worse by LSD. One cannot be dogmatic, but an investigator might ask himself whether someone who cannot communicate much at best is likely to be very useful during an experience that often silences healthy volunteers who have agreed to do their utmost to report. Changes in behavior can be noticed, but one questions their value when their meaning is obscure.

After Smythies (52) rediscovered the similarities in the structural formula of mescaline and adrenalin we started to hunt for substances that might be psychotomimetic and that lie in the enormous series between the two compounds. We thought that we should find some of these intermediate compounds whose activity would be nearer to that of adrenalin than that of mescaline. Clinical information from asthmatics and from Asquith (3), an anesthetist, directed our attention to adrenalin that has lost its pressor qualities. We first investigated adrenochrome and, later, adrenolutin. We think that these two compounds are psychotomimetics. Fabing (17) has recently carried out trials with bufotenine.

While our work has still to be repeated in humans by independent investigators, work with animals (63) has been encouraging. An early attempt by Rinkel, Hyde, and Solomon (57) to reproduce our work with semicarbazone, a more stable adrenochrome, failed, which suggests that there is something specific in the unstable molecule. Later attempts with adrenochrome from another source have also been unsuccessful. The trouble seems to spring from difficulties inherent in the synthesis of both adrenochrome and adrenolutin. A recent letter from J. Harley Mason of Cambridge University, England, states that the causes of these difficulties are not yet clear. I hope that this will be a challenge to organic chemists to sort out and classify these indolic derivatives of adrenalin whose very instability makes them excellent prospects for use as natural psychotomimetic agents. The changes that they induce, although sometimes very striking, are more subtle and less florid than those induced by mescaline or LSD. Consequently, these changes are harder to detect, delineate, and measure and, for persons who are used to mescaline and LSD, they may seem very small. We are trying, however, to reproduce a cross section of an illness that is insidious, that seeps into its victim over a period of weeks and months, so

that these characteristics that make the experiment so difficult to perform are perhaps encouraging.

The more our psychotomimetics resemble the hypothetical endotoxin that Carl Jung (43) called toxin-X and that we have called M (mescaline-like) substance, the harder they will be to test and the more attention they will require in experimental design. Since someone already loaded with M substance might not respond to it at all, it would seem wise in this type of experiment to exclude psychotics, neurotics, epileptics, alcoholics, and psychopaths and to rely on normal volunteers. Isbell's (40) demonstration of the tolerance that is developed for a short time after taking LSD supports this suggestion.

There are other difficulties, such as finding regular supplies of a particular agent, uncertainties about the proper route for administration, individual differences in absorption and susceptibility, the dearth of subjects skilled in self-observation, and the effects of placebo on both the observer and the observed. Before all this comes the task of designing testing schedules to measure and correlate physiological, electrophysiological, biochemical, psychological, and social changes, and then the task of relating these changes to a naturally occurring illness—schizophrenia. The work bristles with difficulties, yet it must be done, for the rewards that it offers are large, even at the soberest reckoning.

No account of model psychoses would be complete that did not relate those that are induced chemically to those induced by other means, such as the reduced or specialized environments described by Heron, Bexton, and Hebb (29) and by Lilly (46). These specialized environments have been used since antiquity, and they raise a host of questions, one of which is of sufficient urgency to discuss briefly.

Most people can adjust themselves to small changes in perception quickly enough for these changes to be of no importance. There are a few situations in which even these small changes can be dangerous and, unless they are expected and sought for, they might not be recognized. In high-speed flying, and as they will in any flight into outer space, men suffer major psychophysiological and psychochemical changes within a very short time (it is artificial to separate these two categories, but the division is practically useful). We know that damage to the liver, even though it has been sustained many years previously, may prolong the effects of both mescaline

(22) and adrenochrome (31) by hours and even days in some people. Under great stress, in the special environment of both the pressure suit and the cabin of an aircraft, a pilot's liver, affected by changes in gravitational pull and possibly by anoxia, might not work sufficiently well to detoxicate the by-products of his own adrenalin. If this happened the pilot might not be able to exert sufficient control to survive.

An aggravating factor in these circumstances would be the steady drinking of alcoholic liquor, due to its known tendency to damage the liver. Low blood sugar and inadequate niacin intake would certainly increase these tendencies. Coffee and tobacco, in excess, would increase the danger.

Atropine derivatives especially should be avoided by men flying planes. It has long been known that hashish (42) and datura make a very deadly mixture that may well enhance endogenous psychotomimetics. Tonini (75) has shown that Methedrine will prolong the effects of LSD-25 and will also intensify them. Thought must be given to lights flashing at certain frequencies (36) and goggles (47, 76) or cabin covers of particular colors that may be necessary at great altitudes.

With so many possible factors to take into consideration, much patient investigation is needed, and one suspects that many unexpected changes in perception would escape notice simply because they cover so many fields.

Do such changes actually occur? I do not know. I do know, however, that the only occasion on which I have ever been unable to relate time to distance was after taking adrenochrome. The reaction made it impossible to drive a car, and it even made being driven very unpleasant. I wonder what it would have been like trying to land a jet plane?

Uses in Psychotherapy

I have read Sandison's (60), Abramson's (1), and Frederking's (23) accounts of the use of LSD-25 and mescaline in psychotherapy, but I have not been able to see the reports of Busch and Johnson (8). I have done some work in this field myself, and I have access to the records of a colleague who has conducted an extended series of experiments in psychotherapy with these substances. Let me emphasize again that those who have not themselves taken a particular substance with which they wish to work, preferably several times, would be wise not

to use these agents in therapy. Possibly no one has done this, but no paper that I have read has made it the essential precondition for such work.

Abramson (1), using a modified psychoanalytical approach, gives small doses of LSD-25 in repeated sessions. He aims to resolve early conflicts by abreaction, free association, and re-education. Sandison (60) gives a varying dose of LSD-25 to chronic neurotic patients in a mental hospital. He uses the experience for group discussion and psychotherapy of a Jungian nature. Frederking (23), whose account is the most sophisticated, compares mescaline and LSD-25, and he discusses about twenty treatments. He uses psychoanalytical methods. Our work started with the idea that a single overwhelming experience might be beneficial to alcoholics, the idea springing from James (41) and Tiebout (74). Thus far it seems that a high dose may be valuable, but that repeated treatment is necessary. At this stage of our investigations we have not yet observed enough patients to be able to give any hard and fast rules as to prescribing these drugs.

Hubbard (36), whose large unpublished series of cases has been most kindly placed at my disposal, has treated a number of gravely ill alcoholics. All seem benefited to some extent, and a number of them to a degree that the patients themselves consider miraculous. Looking over the records it is hard not to agree with the appraisal these patients gave of themselves.

All new therapies enjoy an early period of high success, so that cautious optimism seems to be our wisest attitude, yet there are exciting, indeed, extraordinary possibilities available to the therapist who has himself endured these experiences. The substances in question can be used to develop very high degrees of that mysterious yet vital quality—empathy. Shall we find a mean by which the therapist will share, to a far greater degree than he commonly does now, his patient's experience? Freud (24), Jung (44), and many others (11) have long been aware of transient happenings of this sort.

We should perhaps do well not to be too hidebound by old techniques when using these new tools.

Psychotomimetics and Training

I know of no study dealing specifically with the application of these substances to the training of the workers engaged in

many different disciplines who work together in psychiatry. Such training has resulted from experimental work, but only incidentally. Hyde (39) and others have used these substances to enlarge the sympathy of members of a psychiatric staff for patients in their care. Such a journey of self-discovery may one day be obligatory for those working in psychiatry. Although it might not always be pleasant, with care and understanding this experience would be very useful to the trainee.

The Model Therapies and the Reverse

Schueler (61) seems to have been the founder of model therapies when, in 1934, he gave some of his mescalized medical students sodium succinate by vein. This treatment reduced their symptoms briefly, but the symptoms recurred when the succinate was excreted, which happened quickly. Mayer-Gross (48), using the LSD-25 model, showed that perceptual change is reduced when the blood sugar is over 200 ug. percent. Elkes (13) found that both chlorpromazine and sodium amyral antagonized LSD. Fabing (16) altered the LSD-25 model with azacyclonal (Frenquel), but with mescaline it seems that the effects recurred after more than one-half hour. Hyde (39), during the course of some elegant work, discovered that a social setting that is protective and nutritive results in a reduction of paranoid tendencies and perceptual changes. Hoffer and Agnew (33) used nicotinic acid to alter the LSD-25 model. Giberti and Gregoretti (26) used both reserpine and chlorpromazine in LSD-25 models, and Schwarz, Bickford, and Rome (62) found that LSD-25 models and one mescaline model were much reduced by chlorpromazine.

Schueler's (61) work has never, I think, been used in psychiatric treatment on any scale, although Smythies (67) used sodium succinate on a few chronic schizophrenics without any change. Mayer-Gross's (48) work may have a bearing on insulin therapy and, if it does, a radical change in technique seems indicated. It is said that schizophrenia and diabetes rarely occur together. This may be a lead worth following. Chlorpromazine, reserpine, and Frenquel have, of course, all been used extensively in therapy. Hoffer and I, with our associates (32), are preparing a paper on a large series of schizophrenics treated with massive doses of niacin. At this stage, the results seem promising.

Ways of aggravating model psychoses are equally important, though we know little about them. Hyde (39) found that cold and, particularly, inquisitorial attitudes increase perceptual disorders and paranoid trends. Atropine and its derivatives aggravate the effects of hashish (42) and also those of schizophrenia (35). The effect of datura on hashish has been known for many years in India, and is said to have been used by professional robbers in that country to produce temporary madness in their victims. Methedrine, as I have already indicated, prolongs and reactivates the LSD-25 model. According to a drug addict, Benzedrine in large doses, dissolved in black coffee, is very like mescaline in effect. Hubbard (36) reports that 30 percent CO₂ and 70 percent oxygen will both exaggerate and reactivate the LSD-25 model when inhaled. Smythies (67), using a stroboscope and, latterly, a variable-speed shutter, finds that this enhances some aspects of the mescaline model. I have mentioned earlier in this paper that some people who have had infective hepatitis many years previously endure greatly prolonged responses to mescaline and adrenochrome.

I should like to see these models combined with a reduced or specialized environment. We also need to know within what limits hypnosis can eliminate, aggravate, and facilitate these psychic changes.

Psychotomimetic Agents and Psychology

Heinrich Kluver (45) has pioneered so many trails that it will be no surprise to discover that nearly thirty years ago he was emphasizing the importance of mescaline to psychology in an admirable book now unhappily out of print.

The advances in our understanding of the hallucinatory, the illusional, and the delusional that Kluver considered could be made by studying the effects of mescaline and similar experiences are, for the most part, still undone. During an experiment with adrenochrome I found myself an "it," a thing. The sensation was not one of unreality. It might be called "depersonalization"; but I am not sure that a great variety of self-perceptions is not subsumed under that label. Only comparison and careful classification will tell us.

Let us consider empathy, that feeling for, in, or with other creatures or even things that seems to be so poorly described

in psychological texts. Yet when it is lacking to any great degree something essentially human is lost. Empathy, I know, can increase until one is "involved in mankind," something that most of us feel only when deeply in love. Saints have had such experience sustained for a lifetime; but for the rest of us a few moments of it are ever remembered as supreme exaltation. When members of that Native American Church (65), peyote takers, say that in their meetings this happens frequently, I believe them. It may seem unlikely that the usually insensitive can become acutely and exquisitely aware of the feelings of others, but they can do so.

The development of synesthesia, that strange fusing of two or more sensory modalities, has received some attention, but we know little about minor degrees of this sort of perception and the problems of communicating them. How might this affect schizophrenics? Bleuler (7) in an account of the existentialist psychotherapy gives a hint of the possibilities here.

There is also the matter of thought blocking. I have noticed three different varieties of this phenomenon that appear similar to an outside observer. In one of them, so great is the press of associations that they rupture the chain of thought. In another, illusions and even hallucinations distract one's attention. In the third type it is as if the power of concentration fails and thought fades out. This third type seems to spring from a physiological level. Those who have been able to see into themselves will, I believe, devise better means of inquiry than we now possess.

For the social psychologist there are group studies springing from observations already made with peyote takers. We have made tentative explorations of the experiences of group use of LSD-25. The effects are strange and impressive. We seem to have almost no language suitable for communicating with them. It is as if new dimensions of human relationship are revealed. Such work can be done only by those who are used to these substances.

Other Inquiries Arising from This Work

It is encouraging that many are joining in the hunt now that the question of psychotomimetic indoles has been raised again. Federoff (18, 19, 20), at the University of Saskatchewan, is pursuing the matter of blood toxicity in schizophrenia, with

interesting results. We need much more detailed information about these derivatives of adrenalin and other related compounds, so that we can obtain regular supplies of those that have known, predictable psychotomimetic activity. At the moment there seems to be a considerable difference in potency between various batches of these drugs, and no one knows the precise reason. There is an urgent need for vigorous research in this area of psychopharmacology. We also need a means of temporarily enhancing the effect of psychotomimetics so that while avoiding a model psychosis we can nevertheless spot its presence in the volunteer. Smythies (67), using the stroboscope, has given us a valuable clue here, and he is following this lead at Cambridge University, Cambridge, England.

If we are to succeed, close cooperation between many varied disciplines will be necessary.

I hope that foundations, governments, and large firms will keep this thought continually in mind. Let us encourage people from distant and often hostile groups to meet, talk, and listen together. Let us lure them into making those essential friendships. The attempt will be worth it.

The Exploration of Experience

Our interest, so far, has been psychiatric and pathological, with only a hint that any other viewpoint is possible; yet our predecessors were interested in these things from quite different points of view. In the perspective of history, our psychiatric and pathological bias is the unusual one. By means of a variety of techniques, from dervish dancing to prayerful contemplation, from solitary confinement in darkness to sniffing the carbonated air at the Delphic oracle, from chewing peyote to prolonged starvation, men have pursued, down the centuries, certain experiences that they considered valuable above all others.

The great William James (41) endured much uncalled-for criticism for suggesting that in some people inhalations of nitrous oxide allowed a psychic disposition that is always potentially present to manifest itself briefly. Has our comparative neglect of these experiences, recognized by James and Bergson (5) as being of great value, rendered psychology stale and savorless? Our preoccupation with behavior, because it is measurable, has led us to assume that what can be measured

must be valuable and vice versa. During the twentieth century we have seen, except for a few notables such as Carl Jung, an abandoning of the psyche by psychologists and psychiatrists. Recently they have been joined by certain philosophers (4). Pavlov, Binet, Freud, and a host of distinguished followers legitimately limited the field to fit their requirements, but later expanded their formulations from a limited inquiry to embrace the whole of existence. An emphasis on the measurable and the reductive has resulted in the limitation of interest by psychiatrists and psychologists to aspects of experience that fit in with this concept.

There was and is another stream of psychological thought in Europe and in the United States that is more suitable for the work that I shall discuss next. James, in the United States, Sedgwick, Myers (51), and Gurney in Britain, and Carl Jung in Switzerland are among its great figures. Bergson (5) is its philosopher and Harrison (27) its prophet. These and many others have said that in this work, as in any other, science is applicable if one defines it in Dingle's (12) term, "the rational ordering of the facts of experience." We must not fall into the pitfall of supposing that any explanation, however ingenious, can be a substitute for observation and experiment. The experience must be there before the rational ordering.

Work on the potentialities of mescaline and the rest of these agents fell on the stony ground of behaviorism and doctrinaire psychoanalysis. Over the years we have been deluged with explanations, while observation has become less sharp. This will doubtless continue to be the case as long as the observer and the observed do not realize that splendor, terror, wonder, and beauty, far from being the epiphenomena of "objective" happenings, may be of central importance.

Accounts of the effect of these agents, ranging in time from that of Havelock Ellis (15) in 1897 to the more recent reports of Aldous Huxley (37, 38) are many, and they emphasize the unique quality of the experience. One or more sensory modalities combined with mood, thinking and, often to a marked degree, empathy, usually change. Most subjects find the experience valuable, some find it frightening, and many say that it is uniquely lovely. All, from Slotkin's (65) unsophisticated Indians to men of great learning, agree that much of it is beyond verbal description. Our subjects, who include many who have drunk deep of life, including authors, artists, a junior cabinet

minister, scientists, a hero, philosophers, and businessmen, are nearly all in agreement in this respect. For myself, my experiences with these substances have been the most strange, most awesome, and among the most beautiful things in a varied and fortunate life. These are not escapes from but enlargements, burgeonings of reality. Insofar as I can judge they occur in violation of Hughlings Jackson's (40^a) principle, because the brain, although its functioning is impaired, acts more subtly and complexly than when it is normal. Yet surely, when poisoned, the brain's actions should be less complex, rather than more so! I cannot argue about this because one must undergo the experience himself. Those who have had these experiences know, and those who have not had them cannot know and, what is more, the latter are in no position to offer a useful explanation.

Is this phenomenon of chemically induced mental aberration something wholly new? It is not, as I have suggested earlier. It has been sought and studied since the earliest times and has played a notable part in the development of religion, art, philosophy, and even science. Systems such as yoga have sprung from it. Enormous effort has been expended to induce these states easily so as to put them to use. Although occasionally trivial and sometimes frightening, their like seems to have been at least part of the experience of visionaries and mystics the world over. These states deserve thought and pondering because until we understand them no account of the mind can be accurate. It is foolish to expect a single exploration to bring back as much information as twenty of them. It is equally foolish to expect an untrained, inept, or sick person to play the combined part of observer, experiencer, and recorder as well as a trained and skilled individual. Those who have no taste for this work can help by freely admitting their shortcomings rather than disguising them by some imposing ascription.

This may seem mere nonsense but, before closing his mind, the reader should reflect that something unusual ought to seem irrational because it transcends those fashionable ruts of thinking that we dignify by calling them logic and reason. We prefer such rationalized explanations because they provide an illusory sense of predictability. Little harm is done so long as we do not let our sybaritism blind us to the primacy of experience, especially in psychology.

Psychoanalysts claim that their ideas cannot be fully under-

stood without a personal analysis. Not everyone accepts this claim, but can one ever understand something one has never done? A eunuch could write an authoritative book on sexual behavior, but a book on sexual experience by the same author would inspire less confidence. Working with these substances, as in psychoanalysis, we must often be our own instruments.

Psychoanalysis resembles Galileo's telescope, which lets one see a somewhat magnified image of an object the wrong way round and upside down. The telescope changed our whole idea of the solar system and revolutionized navigation. Psychotomimetic agents, whose collective name is still undecided, are more like the radar telescopes now being built to scan the deeps of outer, invisible space. They are not convenient. One cannot go bird watching with them. They explore a tiny portion of an enormous void. They raise more questions than answers, and to understand those answers we must invent new languages. What we learn is not reassuring or even always comprehensible. Like astronomers, however, we must change our thinking to use the potentialities of our new instruments.

Freud has told us much about many important matters. However, I believe that he and his pupils tried illegitimately to extrapolate from his data far beyond their proper limits in an attempt to account for the whole of human endeavor and, beyond this, into the nature of man and God. This was magnificent bravado. It is not science, for it is as vain to use Freud's system for these greatest questions as it is to search for the galaxies with Galileo's hand telescope. Jung, using what I consider the very inadequate tools of dream and myth, has shown such skill and dexterity that he has penetrated as deep into these mysteries as his equipment allows. Our newer instruments, employed with skill and reverence, allow us to explore a greater range of experience more intensively.

There have always been risks in discovery. Splendid rashness such as John Hunter's should be avoided, yet we must be prepared for calculated risks such as those that Walter Reed and his colleagues took in their conquest of yellow fever. The mind cannot be explored by proxy. To deepen our understanding, not simply to great madnesses but to the nature of mind itself, we must use our instruments as coolly and boldly as those who force their aircraft through other invisible barriers. Disaster may overtake the most skilled. Today and in the past, for much lesser prizes, men have taken much greater risks.

How Should We Name Them?

If mimicking mental illness were the main characteristic of these agents, "psychotomimetics" would indeed be a suitable generic term. It is true that they do so, but they do much more. Why are we always preoccupied with the pathological, the negative? Is health only the lack of sickness? Is good merely the absence of evil? Is pathology the only yardstick? Must we ape Freud's gloomier moods that persuaded him that a happy man is a self-deceiver evading the heartache for which there is no anodyne? Is not a child infinitely potential rather than polymorphously perverse?

I have tried to find an appropriate name for the agents under discussion: a name that will include the concepts of enriching the mind and enlarging the vision. Some possibilities are: psycheboric, mind moving; psychehormic, mind rousing; and psycheplastic, mind molding. Psychezynic, mind fermenting, is indeed appropriate. Psycherhexic, mind bursting forth, though difficult, is memorable. Psychelytic, mind releasing, is satisfactory. My choice, because it is clear, euphonious, and uncontaminated by other associations, is psychedelic, mind manifesting. One of these terms should serve.

Epilogue

This, then is how one clinician sees these psychedelics. I believe that these agents have a part to play in our survival as a species, for that survival depends as much on our opinion of our fellows and ourselves as on any other single thing. The psychedelics help us to explore and fathom our own nature.

We can perceive ourselves as the stampings of an automatic socioeconomic process, as highly plastic and conditionable animals, as congeries of instinctive strivings ending in loss of sexual drive and death, as cybernetic gadgets, or even as semantic conundrums. All of these concepts have their supporters and they all have some degree of truth in them. We may also be something more, "a part of the main," a striving sliver of a creative process, a manifestation of Brahma in Atman, an aspect of an infinite God imminent and transcendent within and without us. These very different valuings of the self and of other peoples selves have all been held sincerely by men and

women. I expect that even what seem the most extreme notions are held by some contributors to these pages. Can one doubt that the views of the world derived from such differing concepts are likely to differ greatly, and that the courses of action determined by those views will differ?

Our briefs, what we assume, as the Ames demonstrations in perception* show, greatly influence the world in which we live. That world is in part, at least, what we make of it. Once our mold for world making is formed it most strongly resists change. The psychedelics allow us, for a little while, to divest ourselves of these acquired assumptions and to see the universe again with an innocent eye. In T. H. Huxley's (38^a) words, we may, if we wish, "sit down in front of the facts like a child" or as Thomas Traherne, a seventeenth-century English mystic, puts it, "to unlearn the dirty devices of the world and become as it were a little child again."** Mystic and scientist have the same recipe for those who seek truth. Perhaps, if we can do this, we shall learn how to rebuild our world in another and better image, for the breakneck advance of science is forcing change on us whether we like it or not. Our old faults, however, persisting in our new edifice, are far more dangerous to us than they were in the old structure. The old world perishes and, unless we are to perish in its ruins, we must leave our old assumptions to die with it. "Let the dead bury their dead" tells us what we must do.

While we are learning, we may hope that dogmatic religion and authoritarian science will keep away from each other's throats. We need not put out the visionary's eyes because we do not share his vision. We need not shout down the voice of the mystic because we cannot hear it, or force our rationalizations on him for our own reassurance. Few of us can accept or understand the mind that emerges from these studies. Kant once said of Swedenborg, "Philosophy is often much embarrassed when she encounters certain facts she dare not doubt

* "... the principle that what we are aware of is not determined entirely by the nature of what is out there or by our sensory processes, but that the assumptions we bring from past experience, because they have generally proved reliable, are involved in every perception we have."

** Also Francis Bacon, the father of modern scientific method, in *Novum Organum*, wrote, "The entrance into the Kingdom of man, founded on the sciences, being not much other than the entrance into the Kingdom of Heaven, whereinto none may enter except as a little child."

yet will not believe for fear of ridicule." Sixty years ago orthodox physicists knew that the atom was incompressible and indivisible. Only a few cranks doubted this. Yet who believes in the billiard-ball atom now?

In a few years, I expect, the psychedelics that I have mentioned will seem as crude as our ways of using them. Yet even though many of them are gleanings from Stone Age peoples they can enlarge our experience greatly. Where we employ these substances for good or ill, whether we use them with skill and deftness or with blundering ineptitude depends not a little on the courage, intelligence, and humanity of many of us who are working in the field today.

Recently I was asked by a senior colleague if this area of investigation lies within the scope of science and, if it does not, should not religion, philosophy, or politics take the responsibility for it? But politics, philosophy, religion, and even art are dancing more and more to the tune of science, and, as scientists, it is our responsibility to see that our tune does not become a death march, either physical or spiritual.

We cannot evade our responsibilities.

So far as I can judge, spontaneous experience of the kind we are discussing has always been infrequent, and the techniques for developing it are often faulty, uncertain, clumsy, objectionable, and even dangerous. Our increasingly excellent physical health, with the steady elimination of both acute and chronic infections, the tranquilizers that enable us to neutralize unusual chemoelectrical brain activity, our diet, rich in protein and, especially, B-complex vitamins whose antagonism to LSD I have already discussed—all of these, combined with a society whose whole emphasis is on material possession in a brightly lit and brilliantly colored synthetic world, will make spontaneous experiences of the sort I have mentioned ever fewer. As we grow healthier and healthier, every millimeter that we budge from an allotted norm will be checked.

I believe that the psychedelics provide a chance, perhaps only a slender one, for homo faber, the cunning, ruthless, foolhardy, pleasure-greedy toolmaker to merge into that other creature whose presence we have so rashly presumed, homo sapiens, the wise, the understanding, the compassionate, in whose fourfold vision art, politics, science and religion are one. Surely we must seize that chance.

Summary

After indicating that there are a number of substances at present subsumed as psychotomimetic agents I have indicated that these are not yet clearly defined, and I have suggested that while mimicking psychosis is one aspect of these agents, it is not the only or even the most important one. I have discussed their great antiquity and have shown how they have attracted man since the dawn of history. Since many drugs produce changes in both body and mind, I consider that some working definition is required that will exclude anesthetics, hypnotics, alcohol, and the derivatives of morphine, atropine, and cocaine. I have suggested as a definition: "Psychotomimetic agents are substances that produce changes in thought, perception, mood and sometimes posture, occurring alone or in concert, without causing either major disturbances of the autonomic nervous system or addictive craving; although, with overdosage, disorientation, memory disturbance, stupor, and even narcosis may occur, these reactions are not characteristic."

This definition, of course, will be modified as knowledge grows.

I have discussed model psychoses induced by means of these agents and have indicated the existence of many gaps in our understanding. I believe that the lack of such information has delayed the development of the sort of inquiry that has recently led to work with adrenochrome, adrenolutin, and bufotenine, mentioning some of the difficulties that beset those who work with the newer and truer psychotomimetics. I have suggested how model therapies modifying model psychoses and the study of means of aggravating or prolonging them provide useful information, and have touched on some of their uses in psychotherapy, emphasizing how much is still unknown.

I believe that there is a place for the use of these substances in the training of psychiatrists, psychologists, nurses, and others working with the mentally ill. I have linked these agents with recent work on the reduced and specialized environment by Hebb and Lilly, and I have discussed some psychological, social, and philosophical implications inherent in this inquiry, relating them to the newer work on perception.

In view of all these considerations, I have suggested that "psychotomimetic" is far too narrow a generic term, and I have

suggested several that imply alterations in the normal mind. Among these proposed designations are "psychehormic," "psychehexic," and "psychezymic," my own preference being "psychelytic," or "psychedelic"—mind manifesting.

REFERENCES

1. Abramson, H. A. "Lysergic Acid Diethylamide (LSD-25). III. As an adjunct to psychotherapy with elimination of fear of homosexuality." *J. Psychol.*, 1955, 39:127-155.
2. Anderson, D. W., and Rawn-sley, K. *Psychiat.-Neurol. Wochschr.*, 1954, 128:38.
3. Asquith, E. Personal communication, 1952.
4. Ayer, A. J. *The Physical Basis of Mind*. Oxford, England: Blackwell, 1950, pp. 70-74.
5. Bergson, H. *The Two Sources of Morality and Religion*. New York: Holt, 1935.
6. Beringer, G. *Mescalinrausch*. Berlin: Julius Springer, 1927.
7. Bleuler, M. "Research and Changes in Concepts in the Study of Schizophrenia, 1941—1950." *Bull. Isaac Ray Med. Library*, 1955, 3(1, 2).
8. Busch, A. K., and Johnson, W. C. *Diseases of Nervous System*. 1950, 11:241.
9. Cantril, H. *The "Why" of Man's Experience*. New York: Macmillan, 1950, p. 67.
10. Cerletti, A. *Neuropharmacology: Transactions of the Second Conference*. New York: Josiah Macy, Jr., Foundation, 1956.
11. Devereux, G. *Psychoanalysis and the Occult*. New York: International Universities Press, 1953.
12. Dingle, H. *The Scientific Adventure*. London: Pitman, 1952.
13. Elkes, J., Elkes, M. B., and Bradley, P. B. *J. Mental Sci.*, 1954, 100:125.
14. Ellenberger, H. Personal communication, 1955.
15. Ellis, H. "Mescal: A New Artificial Paradise." *Annual Report, Smithsonian Inst.*, 1897, p. 537.
16. Fabing, H. D. "New Blocking Agent Against the Development of LSD Psychoses." *Science*, 1951, 121:208.
17. Fabing, H. D., and Hawkings, J. R. "Intravenous Bufotenine Injection in the Human." Unpublished paper, 1956.
18. Federoff, S. "Growth Promotion and Growth Inhibition in Tissue Culture." Doctoral Thesis, Univ. Saskatchewan, Saskatoon, Saskatchewan, Canada, 1955.
19. Federoff, S. *Anat. Record*, 1955, 121:394.
20. Federoff, S. *J. Lab. Clin. Invest.*, 1956.
21. Felice, P. de. *Poisons Sacre, Ivresses Divines*. Paris: A. Michel, 1936.
22. Fischer, R. Georgi, F., and Weber, R. "Modellversuche zum Schizophrenieproblem: LSD und Mezcalin." *Schweiz. Med. Wochschr.*, 1951, 81: 817-837.
23. Frederking, W. "Intoxicant Drugs (LSD-25 and Mescaline) in Psychotherapy." *J. Nervous Mental Disease*, 1955, 121:262.
24. Freud, S. *Collected Papers*. London: Hogarth Press, 1950, vol. 5, pp. 70-73,

26. Gerald, R. W. *Neuropharmacology: Transactions of the Second Conference*, New York: Josiah Macy, Jr., Foundation, 1956.

27. Giberti, F., and Gregoretto, L. "LSD. Psychosis Treated with Chlorpromazine and Reserpine." *Sistema Nervosa*, 1955, 4:301-310.

28. Harrison, C. G. *The Transcendental Universe, Six Lectures*. London: Elliot, 1894.

29. Heffter, A. "Uber Cacteenalkaloide." *Ber. Deut. Chem. Ges. Ber.*, 1896, 29:216-227.

30. Heron, W., Bexton, W. H., and Hebb, D. O. "Cognitive Effects of a Decreased Variation to the Sensory Environment." *The American Psychologist*, 1953, 8(8):366.

31. Hoch, P. H. "Experimentally Produced Psychoses." *Am. J. Psychiat.*, 1951, 107(8):607-611.

32. Hoffer, A., Osmond, H., and Smythies, J. R. "Schizophrenia: A New Approach. II." *J. Mental Sci.*, 1954, 100:29-45.

33. Hoffer, A., Osmond, H., Calbeck, M. J., and Kahan, I. "Treatment of Schizophrenia with Nicotinic Acid and Nicotinamide." In preparation.

34. Hoffer, A., and Agnew, N. "Nicotinic Acid Modified LSD-25 Psychosis." *J. Mental Sci.*, 1955, 101:12-27.

35. Hoffer, A., "Adrenolutin as a Psychotomimetic Agent." Paper delivered at Joint Meeting of the American Association for the Advancement of Science and the American Physiological Society, Atlanta, Ga., 1955.

36. Hoffer, A. "Effect of Atropine on Blood Pressure of Patients with Mental and Emotional Disease." *Arch. Neurol. Psychiat.*, 1954, 71:80.

37. Hubbard, A. M. Personal communications. 1955 and 1956.

37. Huxley, A. L. *The Doors of Perception*. New York: Harper, 1954.

38. Huxley, A. L. *Heaven and Hell*. London: Chatto and Windus, 1956.

38^a. Huxley, T. H. In W. I. B. Beveridge: "The Art of Scientific Investigation." London: Heinemann, 1950.

39. Hyde, R. W. Personal communications. 1954, 1955 and 1956.

40. Isbell, H., Fraser, H. F., Wilier, A., and Belleville, R. E. "Tolerance to Diethylamide of Lysergic Acid (LSD-25)." *Federation Proc.*, 1955, 14: 354.

40^a. Jackson, J. H. "Remarks on Evolution and Dissolution of the Nervous System." *Selected Writings* (1932 ed.). London: Hodder & Stoughton, 1887, vol. 2, pp. 92-118.

41. James, W. *The Varieties of Religious Experience* (twelfth impression). London: Longmans, Green, 1906.

42. Johnson, D. McL. *The Hallucinogenic Drugs*. London: Christopher Johnson, 1953, pp. 15-18.

43. Jung, C. G., trans, by A. A. Brill. "Psychology of Dementia Praecox." *Neur. and Mental Disease*. New York, 1906.

44. Jung, C. G. Personal communication. 1955.

45. Kluver, H. *Mescal: The Divine Plant*. London: Kegan Paul, 1928.

46. Lilly, J. C. "Effects of Physical Restraint and of Reduction of Physical Stimuli on Intact Health Persons." *Symposium No. 2. Illustrative Strategies for Research on Psychopathology*. Group for the Advancement of Psychiatry, 1956, pp. 13-20.

47. Lilly, J. C. Personal communication. 1956.

48. Mayer-Gross, W. Personal communication. 1951.

49. Mayer-Gross, W. *Brit. Med. J.*,

1951 (ii):317-320.

50. McKellar, P. and Simpson, L. "Between Wakefulness and Sleep: Hypnagogic Imagery." *Brit. J. Psychol.*, 1954, 45(4): 266.
51. Myers, F. W. H. *Human Personality*. New York: Longmans, Green, 1954, vols. 1 and 2.
52. Osmond, H., and Smythies, J. R. "Schizophrenia: A New Approach." *J. Mental Sci.*, 1952, 98:309-315.
53. Osmond, H. *Neuropharmacology: Transactions of the Second Conference*. New York: Josiah Macy, Jr., Foundation, 1956.
54. Penne, H. H. "Clinical Experiences with New Hallucinogens." Presented at the American Psychiatric Association Annual Meeting, Chicago, ill., 1956.
55. Peretz, D. I., Smythies, J. R., and Gibson, W. C. "A New Hallucinogen: 3, 4, 5, Trimethoxyphenyl-B-Aminopropane, with Notes on the Stroboscopic Phenomena." *J. Mental Sci.*, 1955, 101:423.
56. Petruso, V. *The Diabolic Root*. Philadelphia: U. of Pennsylvania, 1936.
57. Rinkel, M., Hyde, R. W., and Solomon, H. C. "Experimental Psychiatry. III. A chemical concept of psychosis." *Diseases of Nervous System*, 1954, 15:259.
58. Rinkel, M. *Neuropharmacology: Transactions of the Second Conference*. New York: Josiah Macy, Jr., Foundation, 1956.
59. Rouquier, A. *Le Peyotl*. Paris: G. Doin et Cie., 1927.
60. Sandison, R. A. "Psychological Aspects of the LSD Treatment of the Neuroses." *J. Mental Sci.*, 1954, 100:508-515.
61. Schueler, F. W. "The Effects of Succinate in Mescal Hallucination." *J. Lab. Clin. Med.*, 1948, 33:1297.
62. Schwarz, B. E., Bickford, R. G., and Rome, H. P. "Reversibility of Induced Psychosis with Chlorpromazine." *Proc. Staff Meeting Mayo Clinic*, 1955, 30:407-417.
63. Schwarz, B. E., Wakin, K. G., Bickford, R. G., and Lichtenheld, F. R. *Arch. Neurol. Psychiat.*, 1956, 75:83-90.
64. Simpson, L., and McKellar, P. "Types of Synesthesia." *J. Mental Sci.*, 1955, 101:141-147.
65. Slotkin, J. S. "Menomini Peyotism." *Trans. Am. Phil. Soc.*, 1952, 42(A):565-700.
66. Smythies, J. R. "The Mescaline Phenomena." *Brit. J. Phil. Sci.*, 1953, 3(12):339-347.
67. Smythies, J. R. Personal communications, 1950 and 1955.
68. Stefaniuk, W. B. Personal communication, 1953.
69. Stoll, A., and Hoffman, A. *Hoppe-Seyler's Z. Physiol. Chem.*, 1938, 251-261.
70. Stoll, A., and Hoffman, A. *Helv. Chin. Acta.*, 1943, 26: 944.
71. Stoll, W. A. *Schweiz. Arch. Neurol. Psychiat.*, 1947, 60: 279.
72. Stocking, G. T. "A Clinical Study of the Mescaline Psychosis." *J. Mental Sci.*, 1940, 86:29.
73. Stromberg, U. L. "The Isolation of Bufotenin from Piptadenia peregrina." *J. Chem. Soc.*, 1954, 76:1707.
74. Tiebout, H. "Ego Factors in Surrender in Alcoholism." *Quart. J. Studies Alc.*, 1954, 15:610-621.
75. Tonini, G., and Montanari, C. "Effects of Experimentally Induced Psychoses on Artistic Expression." 1955, 15:4.
76. Turner, H. M. S. Personal communication, 1946.

8. DO DRUGS HAVE RELIGIOUS IMPORT?

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Until six months ago, if I picked up my phone in the Cambridge area and dialed KISS-BIG a voice would answer, "If-if." These were coincidences: KISS-BIG simply happened to be the letter equivalents of an arbitrarily assigned telephone number, while I.F.I.F. represented the initials of an organization with the improbable name of the International Federation for Internal Freedom. But the coincidences were apposite to the point of being poetic. "Kiss big" caught the euphoric, manic, life-embracing attitude that characterized this most publicized of the organizations formed to explore the newly synthesized consciousness-changing substances, while the organization itself was surely one of the "iffy-est" phenomena to appear on our social and intellectual scene in some time. It produced the first firings in Harvard's history, an ultimatum to get out of Mexico in five days, and "the miracle of Marsh Chapel" in which during a two-and-one-half hour Good Friday service ten theological students and professors ingested psilocybin and were visited by what they generally reported to be the deepest religious experiences of their lives.

Despite the last of these phenomena and its numerous if less dramatic parallels, students of religion appear by and large to be dismissing the psychedelic drugs which have sprung to our attention in the sixties as having little religious relevance. The position taken in one of the most forward-looking volumes of theological essays to have appeared in recent years¹ accepts R. C. Zaehner's *Mysticism Sacred and Profane* as having "fully examined and refuted" the religious claims for mescaline which Aldous Huxley sketched in *The Doors of Perception*. This closing of the case strikes me as premature, for it looks as if

the drugs have light to throw on the history of religion, the phenomenology of religion, the philosophy of religion, and the practice of the religious life itself.

1. Drugs and Religion Viewed Historically

In his trial-and-error life explorations man almost everywhere has stumbled upon connections between vegetables (eaten or brewed) and actions (yogic breathing exercises, whirling dervish dances, flagellations) which altered states of consciousness. From the psychopharmacological standpoint we now understand these states to be the products of changes in brain chemistry. From the sociological perspective we see that they tended to be connected in some way with religion. If we discount the wine used in our own communion services, the instances closest to us in time and space are the peyote of The Native American (Indian) Church and Mexico's 2,000-year-old "sacred mushrooms," the latter rendered in Aztec as "God's flesh"—striking parallel to "the body of our Lord" in the Christian Eucharist. Beyond these neighboring instances lie the *soma* of the Hindus, the *haoma* and hemp, identical with and better known as marijuana, of the Zoroastrians, the Dionysius of the Greeks who "everywhere . . . taught men the culture of the vine and the mysteries of his worship and everywhere [was] accepted as a god,"² the *benzoin* of Southeast Asia, Zen's tea whose fifth cup purifies and whose sixth "calls to the realm of the immortals,"³ the *pituri* of the Australian aborigines and probably the mystic *kykeon* that was eaten and drunk at the climactic close of the sixth day of the Eleusian mysteries.⁴ There is no need to extend the list, especially as Philippie de Felice's comprehensive study of the subject, *Poisons Sacré, Ivresses Divines (Sacred Poisons, Divine Raptures)*, is about to appear in English.

More interesting than the fact that consciousness-changing devices have been linked with religion is the possibility that they actually initiated many of the religious perspectives which, taking root in history, continued after their psychedelic origins were forgotten. Bergson saw the first movement of Hindus and Greeks toward "dynamic religion" as associated with the "divine rapture" found in intoxicating beverages;⁵ more recently Robert Graves, Gordon Wasson and Alan Watts have suggested that most religions arose from such chemically-

induced theophanies. Mary Barnard is the most explicit proponent of this thesis. "Which . . . was more likely to happen first," she asks in the autumn 1963 journal of Phi Beta Kappa: "the spontaneously generated idea of an afterlife in which the disembodied soul, liberated from the restrictions of time and space, experiences eternal bliss, or the accidental discovery of hallucinogenic plants that give a sense of euphoria, dislocate the center of consciousness, and distort time and space, making them balloon outward in greatly expanded vistas?" Her own answer is that "the [latter] experience might have had . . . an almost explosive effect on the largely dormant minds of men, causing them to think of things they had never thought of before. This, if you like, is direct revelation." Her use of the subjunctive "might" renders this formulation of her answer equivocal, but she concludes her essay on a note that is completely unequivocal: "Looking at the matter coldly, un intoxicated and unentranced, I am willing to prophesy that fifty theo-botanists working for fifty years would make the current theories concerning the origins of much mythology and theology as out-of-date as pre-Copernican astronomy."⁶

This is an important hypothesis—one which must surely engage the attention of historians of religion for some time to come. But as I am concerned here only to spot the points at which the drugs erupt onto the field of serious religious study, not to ride the geysers to whatever height, I shall not pursue Miss Barnard's thesis. Having located what appears to be the crux of the historical question, namely the extent to which drugs not merely duplicate or simulate theologically sponsored experiences but generate or shape theologies themselves, I turn to phenomenology.

2. *Drugs and Religion Viewed Phenomenologically*

Phenomenology attempts a careful description of human experience. The question the drugs pose for the phenomenology of religion, therefore, is whether the experiences they induce differ from religious experiences reached *au naturel*, and if so how.

Even the Bible notes that chemically induced psychic states bear *some* resemblance to religious ones. Peter had to appeal to a circumstantial criterion—the early hour of the day—to defend those who were caught up in the Pentecostal experience

against the charge that they were merely drunk: "These men are not drunk, as you suppose, since it is only the third hour of the day" (Acts 2:15); and Paul initiates the comparison when he admonishes the Ephesians not to "get drunk with wine . . . but [to] be filled with the spirit" (Ephesians 5:18). Are such comparisons, paralleled in the accounts of virtually every religion, superficial? How far can they be pushed?

Not all the way, students of religion have thus far insisted. With respect to the new drugs, Professor R. C. Zaehner has drawn the line emphatically. "The importance of Huxley's *Doors of Perception*," he writes, "is that in it the author clearly makes the claim that what he experienced under the influence of mescalin is closely comparable to a genuine mystical experience. If he is right . . . the conclusions . . . are alarming."⁷ Zaehner thinks that Huxley is not right, but Zaehner is mistaken.

There are, of course, innumerable drug experiences which haven't a religious feature; they can be sensual as readily as spiritual, trivial as readily as transforming, capricious as readily as sacramental. If there is one point about which every student of the drugs agrees, it is that there is no such thing as the drug experience per se—no experience which the drugs, as it were, merely secrete. Every experience is a mix of three ingredients: drug, set (the psychological makeup of the individual) and setting (the social and physical environment in which it is taken). But given the right set and setting, the drugs can induce religious experiences indistinguishable from ones that occur spontaneously. Nor need set and setting be exceptional. The way the statistics are currently running, it looks as if from one-fourth to one-third of the general population will have religious experiences if they take the drugs under naturalistic conditions, meaning by this conditions in which the researcher supports the subject but doesn't try to influence the direction his experience will take. Among subjects who have strong religious inclinations to begin with, the proportion of those having religious experiences jumps to three-fourths. If they take them in settings which are religious too, the ratio soars to nine out of ten.

How do we know that the experiences these people have really are religious? We can begin with the fact that they say they are. The "one-fourth to one-third of the general populous" figure is drawn from two sources. Ten months after they

had had their experiences, 24 percent of the 194 subjects in a study by the California psychiatrist Oscar Janiger characterized them as having been religious.⁸ Thirty-two percent of the 74 subjects in Ditman and Hayman's study reported that in looking back on their LSD experience it looked as if it had been "very much" or "quite a bit" a religious experience; 42 percent checked as true the statement that they "were left with a greater awareness of God, or a higher power, or ultimate reality."⁹ The statement that three-fourths of subjects having religious "sets" will have religious experiences comes from the reports of sixty-nine religious professionals who took the drugs while the Harvard project was in progress.¹⁰

In the absence of (a) a single definition of a religious experience acceptable to psychologists of religion generally, and (b) foolproof ways of ascertaining whether actual experiences exemplify any definition, I am not sure there is a better way of telling whether the experiences of the 333 men and women involved in the above studies were religious than by noting whether they seemed so to them. But if more rigorous methods are preferred, they exist; they have been utilized and confirm the conviction of the man in the street that drug experiences can indeed be religious. In his doctoral study at Harvard University, Dr. Walter Pahnke worked out a typology of religious experience (in this instance of the mystical variety) based on the classic cases of mystical experiences as summarized in Walter Stace's *Mysticism and Philosophy*. He then administered psilocybin to ten theology students and professors in the setting of a Good Friday service. The drug was given "double-blind," meaning that neither Dr. Pahnke nor his subjects would know which ten were getting psilocybin and which ten placebos to constitute a control group. Subsequently the reports the subjects wrote of their experiences were laid successively before three college-graduate housewives who, without being informed about the nature of the study, were asked to rate each statement as to the degree (strong, moderate, slight, or none) to which it exemplified each of the nine traits of mystical experience as enumerated in the typology of mysticism worked out in advance. When the test of significance was applied to their statistics, it showed that "those subjects who received psilocybin experienced phenomena which were indistinguishable from, if not identical with . . . the categories defined by our typology of mysticism."¹¹

With the thought that the reader might like to test his own powers of discernment on the question being considered, I insert here a simple test I gave to a group of Princeton students following a recent discussion sponsored by the Woodrow Wilson Society.

Below are accounts of two religious experiences. One occurred under the influence of drugs, one without their influence. Check the one you think was drug-induced.

I

Suddenly I burst into a vast, new, indescribably wonderful universe. Although I am writing this over a year later, the thrill of the surprise and amazement, the awesomeness of the revelation, the engulfment in an overwhelming feeling-wave of gratitude and blessed wonderment, are as fresh, and the memory of the experience is as vivid, as if it had happened five minutes ago. And yet to concoct anything by way of description that would even hint at the magnitude, the sense of ultimate reality . . . this seems such an impossible task. The knowledge which has infused and affected every aspect of my life came instantaneously and with such complete force of certainty that it was impossible, then or since, to doubt its validity.

II

All at once, without warning of any kind, I found myself wrapped in a flame-colored cloud. For an instant I thought of fire . . . the next, I knew that the fire was within myself. Directly afterward there came upon me a sense of exultation, of immense joyousness accompanied or immediately followed by an intellectual illumination impossible to describe. Among other things, I did not merely come to believe, but I saw that the universe is not composed of dead matter, but is, on the contrary, a living Presence; I became conscious in myself of eternal life. . . . I saw that all men are immortal: that the cosmic order is such that without any peradventure all things work together for the good of each and all; that the foundation principle of the world . . . is what we call love, and that the happiness of each and all is in the long run absolutely certain.

On the occasion referred to, twice the number of students (46) answered incorrectly as answered correctly (23). I bury

the correct answer in a footnote to preserve the reader's opportunity to test himself.¹²

Why, in the face of this considerable evidence, does Zaehner hold that drug experiences cannot be authentically religious? There appear to be three reasons:

1. His own experience was "utterly trivial." This of course proves that not all drug experiences are religious; it does not prove that no drug experiences are religious.

2. He thinks that the experiences of others which appear to be religious to them are not truly so. Zaehner distinguishes three kinds of mysticism: nature mysticism in which the soul is united with the natural world; monistic mysticism in which the soul emerges with an impersonal absolute; and theism in which the soul confronts the living, personal God. He concedes that drugs can induce the first two species of mysticism, but not its supreme instance, the theistic. As proof, he analyzes Huxley's experience as recounted in *The Doors of Perception* to show that it produced at best a blend of nature and monistic mysticism. Even if we were to accept Zaehner's evaluation of the three forms of mysticism, Huxley's case, and indeed Zaehner's entire book, would prove only that not every mystical experience induced by the drugs is theistic. Insofar as Zaehner goes beyond this to imply that drugs do not and cannot induce theistic mysticism, he not only goes beyond the evidence but proceeds in the face of it. Professor Slotkin reports that the peyote Indians "see visions, which may be of Christ Himself. Sometimes they hear the voice of the Great Spirit. Sometimes they become aware of the presence of God and of those personal shortcomings which must be corrected if they are to do His will."¹³ And G. M. Carstairs, reporting on the use of psychedelic *bhang* (marijuana) in India, quotes a Brahmin as saying, "It gives good bhakti. . . . You get a very good bhakti with *bhang*," *bhakti* being precisely Hinduism's theistic variant.¹⁴

3. There is a third reason why Professor Zaehner might doubt that drugs can induce experiences that are genuinely mystical. Professor Zaehner is a Roman Catholic, and Roman Catholic doctrine teaches that mystical rapture is a gift of grace and as such can never be reduced to man's control. This may be true; certainly the empirical evidence cited does not preclude the possibility of a genuine ontological or theological difference between natural and drug-induced religious ex-

periences. At this point, however, we are considering phenomenology rather than ontology, description rather than interpretation, and on this level there is no difference. Descriptively, drug experiences cannot be distinguished from their natural religious counterpart. When the current philosophical authority on mysticism, Dr. W. T. Stace, Professor Emeritus at Princeton University, was asked whether the drug experience is similar to the mystical experience, he answered, "It's not a matter of its being *similar* to mystical experience; it *is* mystical experience."

What we seem to be witnessing in Zaehner's *Mysticism Sacred and Profane* is a reenactment of the age-old pattern in the conflict between science and religion. Whenever a new controversy arises, religion's first impulse is to deny the disturbing evidence science has produced. Seen in perspective, Zaehner's refusal to admit that drugs can induce experiences descriptively indistinguishable from those which are spontaneously religious is the current counterpart of the seventeenth century theologians' refusal to look through Galileo's telescope or, when they did, their persistence in dismissing what they saw as machinations of the devil. When the fact that drugs can trigger religious experiences becomes incontrovertible, discussion will move to the more difficult question of how this new fact is to be interpreted. The latter question leads beyond phenomenology into philosophy.

3. Drugs and Religion Viewed Philosophically

Why do people reject evidence? Because they find it threatening, we may suppose. Theologians are not the only professionals to utilize this mode of defense. In his *Personal Knowledge*, Michael Polanyi recounts the way the medical profession ignored such palpable facts as the painless amputation of human limbs, performed before their own eyes in hundreds of successive cases, concluding that the subjects were imposters who were either deluding their physician or colluding with him. One physician, Esdaile, carried out about 300 major operations painlessly under mesmeric trance in India, but neither in India nor in Great Britain could he get medical journals to print accounts of his work. Polanyi attributes this closed-mindedness to "lack of a conceptual framework in

which their discoveries could be separated from specious and untenable admixtures."

The "untenable admixture" in the fact that psychotomimetic drugs can induce religious experience is their apparent implicate: that religious disclosures are no more veridical than psychotic ones. For religious skeptics, this conclusion is obviously not untenable at all; it fits in beautifully with their thesis that *all* religion is at heart an escape from reality. Psychotics avoid reality by retiring into dream worlds of make-believe; what better evidence that religious visionaries do the same than the fact that identical changes in brain chemistry produces both states of mind? Had not Marx already warned us that religion is the "opiate" of the people? Apparently he was more literally accurate than he supposed. Freud was likewise too mild. He "never doubted that religious phenomena are to be understood only on the model of the neurotic symptoms of the individual."¹⁵ He should have said "psychotic symptoms."

So the religious skeptic is likely to reason. What about the religious believer? Convinced that religious experiences are not fundamentally delusory, can he admit that psychotomimetic drugs can occasion them? To do so he needs (to return to Polanyi's words) "a conceptual framework in which [the discoveries can] be separated from specious and untenable admixtures," the latter being in this case the conclusion that religious experiences are in general delusory.

One way to effect the separation would be to argue that despite Phenomenological similarities between natural and drug-induced religious experiences, they are separated by a crucial *ontological* difference. Such an argument would follow the pattern of theologians who argue for the "real presence" of Christ's body and blood in the bread and wine of the Eucharist despite their admission that chemical analysis, confined as it is to the level of "accidents" rather than "essences," would not disclose this presence. But this distinction will not appeal to many today, for it turns on an essence-accident metaphysics which is not widely accepted. Instead of fighting a rearguard action by insisting that if drug and nondrug religious experiences can't be distinguished empirically there must be some transempirical factor which distinguishes them and renders the drug experience profane, I wish to explore the possibility of accepting drug-induced experiences as religious in every

sense of the word without relinquishing confidence in the truth claims of religious experience generally.

To begin with the weakest of all arguments, the argument from authority: William James didn't discount *his* insights which occurred while his brain chemistry was altered. The paragraph in which he retrospectively evaluates his nitrous oxide experiences has become classic, but it is so pertinent to the present discussion that it merits quoting again.

One conclusion was forced upon my mind at that time, and my impression of its truth has ever since remained unshaken. It is that our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst all about it, parted from it by the filmiest of screens, there lie potential forms of consciousness entirely different. We may go through life without suspecting their existence; but apply the requisite stimulus, and at a touch they are there in all their completeness, definite types of mentality which probably somewhere have their field of application and adaptation. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. How to regard them is the question—for they are so discontinuous with ordinary consciousness. Yet they may determine attitudes though they cannot furnish formulas, and open a region though they fail to give a map. At any rate, they forbid a premature closing of our accounts with reality. Looking back on my own experiences, they all converge toward a kind of insight to which I cannot help ascribing some metaphysical significance.¹⁶

To this argument from authority, I add two that try to provide something by way of reasons. Drug experiences that assume a religious cast tend to have fearful and/or beatific features, and each of my hypotheses relates to one of these aspects of the experience.

Beginning with the ominous, "fear of the Lord," awe-ful features, Gordon Wasson, the New York banker-turned-mycologist, describes these as he encountered them in his psilocybin experience as follows: "Ecstasy! In common parlance . . . ecstasy is fun. . . . But ecstasy is not fun. Your very soul is seized and shaken until it tingles. After all, who will choose to feel undiluted awe . . . ? The unknowing vulgar abuse the word; we must recapture its full and terrifying sense." Emotionally the drug experience can be like having forty-foot waves crash over you for several hours while you cling desperately to a life raft which may be swept from under you at

any minute. It seems quite possible that such an ordeal, like any experience of a close call, could awaken rather fundamental sentiments respecting life and death and destiny and trigger the "no atheists in foxholes" effect. Similarly, as the subject emerges from the trauma and realizes that he is not going to be insane as he had feared, there may come over him an intensified appreciation like that frequently reported by patients recovering from critical illness. "It happened on the day when my bed was pushed out of doors to the open gallery of the hospital," reads one such report.

I cannot now recall whether the revelation came suddenly or gradually; I only remember finding myself in the very midst of those wonderful moments, beholding life for the first time in all its young intoxication of loveliness, in its unspeakable joy, beauty, and importance. I cannot say exactly what the mysterious change was. I saw no new thing, but I saw all the usual things in a miraculous new light—in what I believe is their true light. I saw for the first time how wildly beautiful and joyous, beyond any words of mine to describe, is the whole of life. Every human being moving across that porch, every sparrow that flew, every branch tossing in the wind, was caught in and was a part of the whole mad ecstasy of loveliness, of joy, of importance, of intoxication of life.¹⁷

If we do not discount religious intuitions because they are prompted by battlefields and *physical* crises; if we regard the latter as "calling us to our senses" more often than they seduce us into delusions, need comparable intuitions be discounted simply because the crises that trigger them are of an inner, *psychic* variety?

Turning from the hellish to the heavenly aspects of the drug experience, *some* of the latter may be explainable by the hypothesis just stated; that is, they may be occasioned by the relief that attends the sense of escape from high danger. But this hypothesis cannot possibly account for *all* the beatific episodes for the simple reason that the positive episodes often come first, or to persons who experience no negative episodes whatever. Dr. Sanford Unger of the National Institute of Mental Health reports that among his subjects "50 to 60 percent will not manifest any real disturbance worthy of discussion," yet "around 75" will have at least one episode in which exaltation, rapture, and joy are the key descriptions.¹⁸ How are we to

account for the drug's capacity to induce peak experiences, such as the following, which are *not* preceded by fear?

A feeling of great peace and contentment seemed to flow through my entire body. All sound ceased and I seemed to be floating in a great, very very still void or hemisphere. It is impossible to describe the overpowering feeling of peace, contentment, and being a part of goodness itself that I felt. I could feel my body dissolving and actually becoming a part of the goodness and peace that was all around me. Words can't describe this. I feel an awe and wonder that such a feeling could have occurred to me.¹⁹

Consider the following line of argument. Like every other form of life, man's nature has become distinctive through specialization. Man has specialized in developing a cerebral cortex. The analytic powers of this instrument are a standing wonder, but it seems less able to provide man with the sense that he is meaningfully related to his environment, to life, the world and history in their wholeness. As Albert Camus describes the situation, "If I were . . . a cat among animals, this life would have a meaning, or rather this problem would not arise, for I should belong to this world. I would *be* this world to which I am now opposed by my whole consciousness."²⁰ Note that it is Camus' consciousness that opposes him to his world. The drugs do not knock this consciousness out, but while they leave it operative they also activate areas of the brain that normally lie below its threshold of awareness. One of the clearest objective signs that the drugs are taking effect is the dilation they produce in the pupils of the eyes, while one of the most predictable subjective signs is the intensification of visual perception. Both of these responses are controlled by portions of the brain that lie deep, further to the rear than the mechanisms that govern consciousness. Meanwhile we know that the human organism is interlaced with its world in innumerable ways it normally cannot sense—through gravitational fields, body respiration, and the like; the list could be multiplied until man's skin began to seem more like a thoroughfare than a boundary. Perhaps the deeper regions of the brain which evolved earlier and are more like those of the lower animals—"If I were . . . a cat . . . I should belong to this world"—can sense this relatedness better than can the cerebral cortex which now dominates our awareness. If so, when the drugs rearrange the neurohumorals that chemically

transmit impulses across synapses between neurons, man's consciousness and his submerged, intuitive, ecological awareness might for a spell become interlaced. This is, of course, no more than a hypothesis, but how else are we to account for the extraordinary incidence under the drugs of that kind of insight the keynote of which James described as

invariably a reconciliation. It is as if the opposites of the world, whose contradictoriness and conflict make all our difficulties and troubles, were melted into one and the same genus, but *one of the species, the nobler and better one, is itself the genus, and so soaks up and absorbs its opposites into itself.*²¹

4. *The Drugs and Religion Viewed "Religiously"*

Suppose that drugs can induce experiences that are indistinguishable from religious ones, and that we can respect their reports. Do they shed any light, not (we now ask) on life, but on the nature of the religious life?

One thing they may do is throw religious experience itself into perspective by clarifying its relation to the religious life as a whole. Drugs appear able to induce religious experiences; it is less evident that they can produce religious lives. It follows that religion is more than religious experiences. This is hardly news, but it may be a useful reminder, especially to those who incline toward "the religion of religious experience," which is to say toward lives bent on the acquisition of desired states of experience irrespective of their relation to life's other demands and components.

Despite the dangers of faculty psychology, it remains useful to regard man as having a mind, a will, and feelings. One of the lessons of religious history is that to be adequate a faith must rouse and involve all three components of man's nature. Religions of reason grow arid; religions of duty, leaden. Religions of experience have their comparable pitfalls, as evidenced by Taoism's struggle (not always successful) to keep from degenerating into quietism, and the vehemence with which Zen Buddhism has insisted that once students have attained *satori*, they must be driven out of it, back into the world. The case of Zen is especially pertinent here, for it pivots on an enlightenment experience—*satori* or *kensho*—which some (but not all) Zennists say resembles LSD. Alike

or different, the point is that Zen recognizes that unless the experience is joined to discipline, it will come to naught.

Even the Buddha . . . had to sit. . . . Without *joriki*, the particular power developed through *zazen* [seated meditation], the vision of oneness attained in enlightenment . . . in time becomes clouded and eventually fades into a pleasant memory instead of remaining an omnipresent reality shaping our daily life. . . . To be able to live in accordance with what the Mind's eye has revealed through *satori* requires, like the purification of character and the development of personality, a ripening period of *zazen*.²²

If the religion of religious experience is a snare and a delusion, it follows that no religion that fixes its faith primarily in substances that induce religious experiences can be expected to come to a good end. What promised to be a shortcut will prove to be a short circuit; what began as a religion will end as a religion surrogate. Whether chemical substances can be helpful *adjuncts* to faith is another question. The peyote-using Native American Church seems to indicate that they can be; anthropologists give this church a good report, noting among other things that members resist alcohol and alcoholism better than do non-members.²³ The conclusion to which evidence currently points would seem to be that chemicals *can* aid the religious life, but only where set within a context of faith (meaning by this the conviction that what they disclose is true) and discipline (meaning diligent exercise of the will in the attempt to work out the implications of the disclosures for the living of life in the every day, common sense world).

Nowhere today in Western civilization are these two conditions jointly fulfilled. Churches lack faith in the sense just mentioned, hipsters lack discipline. This might lead us to forget about the drugs, were it not for one fact: the distinctive religious emotion and the one drugs unquestionably can occasion—Otto's *mysterium tremendum, majestas, mysterium fascinans*; in a phrase, the phenomenon of religious awe—seems to be declining sharply. As Paul Tillich said in an address to the Hillel Society at Harvard several years ago:

The question our century puts before us [is]: Is it possible to regain the lost dimension, the encounter with the Holy, the dimension which cuts through the world of subjectivity and objectivity and goes down to that which is not world but is the mystery of the Ground of Being?

Tillich may be right; this may be the religious question of our century. For if (as we have insisted) religion cannot be equated with religious experience, neither can it long survive its absence.

REFERENCES

1. *Soundings: Essays Concerning Christian Understandings*, edited by A. R. Vidler. Cambridge: The University Press, 1962. The statement cited appears on page 72.
2. Hamilton, Edith. *Mythology*. New York, Mentor Book, 1940, p. 55.
3. Quoted in Alan Watts, *The Spirit of Zen*. New York: Grove Press, 1958, p. 110.
4. Mylonas, George. *Eleusis and the Eleusian Mysteries*. Princeton, N. J.: Princeton University Press, 1961, p. 284.
5. *Two Sources of Morality and Religion*. New York: Henry Holt and Co., 1935, pp. 206-212.
6. "The God in the Flowerpot." *The American Scholar* (Autumn 1963), pp. 584, 586.
7. *Mysticism, Sacred and Profane*. New York: Oxford Galaxy Book, 1961, p. 12.
8. Quoted in McGlothlin, William H. "Long-lasting Effects of LSD on Certain Attitudes in Normals." Printed for private distribution by the RAND Corporation, p. 16.
9. *Ibid.*, pp. 45, 46.
10. Leary, Timothy. "The Religious Experience: Its Production and Interpretation." *The Psychedelic Review*, vol. I, no 3 (1964), p. 325.
11. "Drugs and Mysticism: An Analysis of the Relationship Between Psychedelic Drugs and the Mystical Consciousness." A thesis presented to the Committee on Higher Degrees in History and Philosophy of Religion, Harvard University, June 1963.
12. The first account is quoted anonymously in "The Issue of the Consciousness-Expanding Drugs." *Main Currents in Modern Thought* vol. XX, no. 1 (September-October 1963), pp. 10-11. The second experience was that of Dr. R. M. Bucke, the author of *Cosmic Consciousness*, as quoted in James, William. *The Varieties of Religious Experience*. New York: The Modern Library, 1902, pp. 390-391. The former experience occurred under the influence of drugs, the latter did not.
13. Slotkin, James S. *Peyote Religion*. Glencoe, Ill.: Free Press, 1956.
14. "Daru and Bhang." *Quarterly Journal of the Study of Alcohol*. 1954, 15:229.
15. *Totem and Taboo*. New York: Modern Library, 1938.
16. *The Varieties of Religious Experience*, *op. cit.*, pp. 378-379.
17. Montague, Margaret Prescott. *Twenty Minutes of Reality*. Saint Paul, Minn.: Macalester Park Publishing Company, 1947, pp. 15, 17.
18. "The Current Scientific Status of Psychedelic Drug Research." A paper read at the Conference on Methods in Philosophy and the Sciences, New School for Social Research, May 3, 1964.
19. Quoted by Dr. Unger in the paper just mentioned.
20. *The Myth of Sisyphus*. New York: Vintage, 1955, p. 38.
21. James, William, *op. cit.*, p. 379.
22. Kapleau, Philip. *Zen Practice and Attainment*. A manuscript in process of publication.
23. Slotkin, James S., *op. cit.*

9. POINTS OF DISTINCTION BETWEEN SEDATIVE AND CONSCIOUSNESS- EXPANDING DRUGS

WILLIAM S. BURROUGHS

Unfortunately the word "drug" activates a reflex of fear, disapproval and prurience in Western nervous systems. "Drug" of course is simply a generic term for any chemical agent. Alcohol is a sedative drug similar in action to the barbiturates. Yet because of purely verbal associations we do not think of alcohol as being a drug because it *is* our national drug. The American narcotics department has bracketed substances with opposite physiological effect as narcotic drugs. Morphine is actually an antidote for cocaine poisoning. Cannabis (the Latin term for preparations made from the hemp plant, such as marihuana and hashish) is a hallucinogen drug with no chemical or physiological affinity to either cocaine or morphine. Yet cocaine, morphine and cannabis are all classified as "narcotic drugs." Unquestionably the term has emotional impact. But used in such a loose fashion it has no useful precision of meaning. I would like to draw at the outset a clear distinction between sedative and hallucinogen agents, between addicting and non-addicting drugs.

What is addiction? The use of opium and/or derivatives leads to a state that defines, limits and describes addiction. So the morphine or heroin addict provides the model and mirror of addiction. The addict functions on heroin. Without it he is helpless as a beached fish out of his medium. As a diver depends on his air line, the addict depends on his heroin connection. This situation of total dependence did not exist prior to his contact with heroin and his subsequent addiction. A month more or less of daily exposure through injection or sniffing the drug and the addict is hooked, that is, addicted for life. Even if the addict is cured and off the drug for years he can be re-addicted by one or two shots. Like the alcoholic, he has ac-

quired a lifelong sensitivity to the drug. Investigators still do not know how heroin addiction is contracted. Doctor Isbell of Lexington, Kentucky, where most U.S. addicts are treated, has suggested that morphine acts on the cell receptors, perhaps altering the molecular structure of certain cell groups in the body.

While the action of morphine is not fully understood, alcohol and barbiturates are definite front-brain sedatives, and increased doses are generally required to achieve sedation. In fact, all sedative drugs may be said to act by sedating, that is, putting out of action some function of the nervous system, by decreasing awareness of surroundings and bodily processes. Addiction would seem to be a prerogative of sedatives and perhaps the opiates are the only class of truly addicting drugs. The symptoms that follow barbiturate withdrawal may be regarded as a mechanical reaction from massive front-brain sedation rather than a biological need for the drug.

What is a hallucinogen? A drug that expands consciousness and increases awareness of surroundings and bodily processes. (I would suggest that the term consciousness-expanding drugs be substituted for hallucinogen drugs since actual hallucinations are rare and no precise definition of hallucination has been formulated.) Under the influence of mescaline, LSD, cannabis, the subject is acutely aware of colors, sounds, odors, and the effects of the drug may be said to consist in this phenomenon of increased awareness which may be pleasant or unpleasant depending on the content of awareness. Colors and sounds gain an intense meaning and many insights carry over after the drug effects have worn off. Under the influence of mescaline I have had the experience of seeing a painting for the first time and found later that I could see the painting without using the drug. The same insights into music or the beauty of an object ordinarily ignored carry over so that one exposure to a powerful consciousness-expanding drug often conveys a permanent increase in the range of experience. Mescaline transports the user to unexplored psychic areas, and he can often find the way back without a chemical guide.

I will describe a simple experiment that will make the distinction between sedative and consciousness-expanding drugs more precise. So far as I know this experiment has not been carried out in detail. Here is the proposed experiment: Administer a consciousness-expanding drug together with a pre-

cise array of stimuli—music, pictures, odors, tastes-timed and recorded so that the entire battery of stimuli can be exactly repeated. Some days later when the effects of the drug are completely dissipated expose the subject to the same stimuli in the same order. To what extent is the hallucinogen experience reactivated? Everyone who has used the consciousness-expanding drugs knows that any *one* stimulus experienced under the influence of the drug can reactivate the drug experience. There is every reason to believe that the drug experience could be recaptured in detail with a precise repetition of associated stimuli.

Now try the same experiment with a morphine addict. Administer a dose of morphine together with a battery of stimuli. Wait until withdrawal symptoms occur. Now repeat the stimuli. Is any relief from withdrawal symptoms experienced? On the contrary, the associated stimuli reactivate and intensify need for the drug. The same of course is true of alcohol. Stimuli associated with the consumption of alcohol activate the need for alcohol and conduce to relapse in the cured alcoholic.

The use of sedative drugs leads to increased dependence on the drug used. The use of consciousness-expanding drugs could show the way to obtain the useful aspects of hallucinogen experience without any chemical agent. Anything that can be done chemically can be done in other ways, given sufficient knowledge of the mechanisms involved. Recently a Cambridge dentist has extracted teeth with no other anesthetic than music through head phones. The patient was instructed to turn up the volume if he experienced any pain. The consciousness-expanding experience has been produced by flicker, that is, rhythmic light flashes in the retinae at the rate of from ten to twenty-five flashes per second. I quote from Grey Walters, *The Living Brain*: "The rhythmic series of flashes appeared to be breaking down of some of the physiological barriers between different regions of the brain. This meant that the stimulus of flicker received in the visual projection area of the cortex was breaking bounds, its ripples were overflowing into other areas."

Now it is precisely this overflow of the brain areas, hearing, colors, seeing sounds and even odors that is a categorical characteristic of the consciousness-expanding drugs. Along with flicker Grey Walters has produced many of the phenome-

na associated with consciousness-expanding drugs. Subjects reported: "Lights like comets . . . Ultra unearthly colors, mental colors not deep visual ones. . . ."

The literature of mescaline and LSD abounds in such regrettably vague descriptions of visionary experiences. Further experiments with subliminal doses of mescaline accompanied by flicker, flicker administered under large dosage and repeated later, could well lead to a *non-chemical* method of expanding consciousness and increasing awareness.

There are many consciousness-expanding drugs each with distinct properties, and scientists are just beginning to explore the chemistry of these drugs. I have had personal experience with mescaline, LSD, *Banisteria caapi*, kava kava, dimethyltryptamine and several others in the form of herbal preparations, the content of which was unknown to me. All these drugs open different psychic areas. Some of these areas are pleasant, some are not. Dimethyltryptamine and bufotenine seem to produce in many subjects alarming and disagreeable symptoms, and both drugs in my opinion should be used with great caution or not at all. Overdose of consciousness-expanding drugs can be a nightmare experience owing to the increased awareness of unpleasant or dangerous symptoms. I would like to mention a drug which is neither a front-brain stimulant like cocaine, nor a sedative like morphine and barbiturates, nor a tranquilizer, nor an energizer, nor a hallucinogen, a drug that could act as a useful stabilizing agent when using the consciousness-expanding drugs. This drug is apomorphine. I quote from *Anxiety and Its Treatment* by Doctor John Dent of London: "Apomorphine is made from morphine by boiling with hydrochloric acid, but its physiological effect is quite different—apomorphine acts on the hypothalamus in such a way as to normalize metabolism and regulate the blood serum."

Administered with a consciousness-expanding drug apomorphine stabilizes the experience and reduces anxiety. I have observed and personally experienced dramatic relief from anxiety resulting from consciousness-expanding drugs after a dose of Apomorphine. The drug has no sedative or addicting properties. No case of addiction to Apomorphine has ever been recorded. Yet because of purely verbal associations the drug has been placed under the Harrison Narcotic Act and is seldom prescribed in this country. Apomorphine is a unique drug in

that it acts as a metabolic regulator which stabilizes but does not cancel the consciousness-expanding experience.

In conclusion: The sedative drugs act to decrease awareness, and increased dosage is generally required to achieve or maintain this state of decreased awareness. The consciousness-expanding drugs act to increase awareness, and this state of increased awareness can become a permanent acquisition.

It is unfortunate that marihuana, which is certainly the safest of the hallucinogen drugs, should be subject to the heaviest legal sanctions. Unquestionably this drug is very useful to the artist, activating trains of association that would otherwise be inaccessible, and I owe many of the scenes in *Naked Lunch* directly to the use of cannabis. Opiates, on the other hand, since they act to diminish awareness of surroundings and bodily processes, can only be a hindrance to the artist. Cannabis serves as a guide to psychic areas which can then be reentered without it. I have now discontinued the use of cannabis for some years and find that I am able to achieve the same results by non-chemical means: flicker, music through head phones, cutups and foldings of my texts, and especially by training myself to think in association blocks instead of words, that is, cannabis, like all the hallucinogens, can be discontinued once the artist has familiarized himself with the areas opened up by the drug. Cannabis sometimes causes anxiety in large doses, and this anxiety is promptly relieved by Apomorphine.

It would seem to me that cannabis and the other hallucinogens provide a key to the creative process, and that a systematic study of these drugs would open the way to non-chemical methods of expanding consciousness.

10. LSD, TRANSCENDENCE, AND THE NEW BEGINNING

JAMES TERRILL, PH.D.
CHARLES SAVAGE, M.D.
DONALD D. JACKSON, M.D.

On the 16th of January, 1960, a day-long symposium on lysergic acid diethylamide was held at the Napa State Hospital, Imola, California.¹ The symposium attracted considerable regional attention and was later broadcast over KPFA, an educational FM station. Because of its length it has been impossible to publish it in its entirety. As a joint contribution of the Mental Research Institute, Palo Alto, JNMD herewith presents papers given at the symposium by three members of that Institute, Dr. Charles Savage, Dr. James Terrill and Dr. Donald D. Jackson. The manuscripts have been edited by Dr. Savage and where possible have been brought up to date with footnotes. An effort has been made to capture the original spirit of the symposium, which was characterized by a turning away from the conventional view of LSD as a mere facilitator of therapy toward the view of it as a new experience, a new beginning.²

¹ Sponsored by Dr. Theo Miller, Superintendent, Dr. William Mandel, late Director of Research, and Harry Althouse, regional representative of the Sandoz Corporation.

² Both points of view were introduced by Dr. Sidney Cohen, chairman of the symposium. The earlier point of view was presented by Dr. Michael Agron, of Palo Alto. It has been amply documented in the literature (e.g., 1, 2, 5, 7, 11, 20, 21). A critique of this point of view was published by Savage in 1957 (23). The newer point of view was developed by Osmond and Hoffer (9, 18).

The Nature of the LSD Experience

JAMES TERRILL, PH.D.³

What is the nature of the LSD experience? There is no simple answer to this question. Early in our work with LSD at the Mental Research Institute it became clear that there are no regular and predictable effects of LSD *per se*, but rather that the effects are the result of a complex interaction⁴ of the drug, the psychological and physical environment, the personality structure of the subject and therapist, and the set or expectancy as to what the drug would do. Judging from the literature on LSD, this point about the relativity of LSD effects has not been sufficiently emphasized (2).

Our conclusions regarding the psychological effects of LSD have developed out of a series of exploratory studies that were carried out at the Mental Research Institute over a two-year period (1958-59). Ss have included 60 volunteers and 29 psychiatric patients. Most of the volunteers Ss were professional people (psychiatrists, psychologists and social workers) who took the drug, ostensibly, out of curiosity. The psychiatric patients were, for the most part, already in regular psychotherapy and were taking the drug as a part of their treatment. Many of our Ss have had more than one LSD experience.

During some of the early work at the Institute several ways of approaching the subject in the LSD state were tried, including the administration of psychological tests and the utilization of various interview techniques. Experiments in this regard led to the conclusion that any attempt on the experimenter's part to impose a structured test or interview on the situation had the effect of radically altering the subjective experience

³ Mental Research Institute, Medical Research Foundation, Palo Alto, California. This work was made possible by USPHS Grant MY 2621.

⁴ I prefer the word "transaction" introduced by Cantril (6). Implicit in this concept is the necessity to structure the environment according to what one wishes to get out of it (22). The patterning of the milieu described hereafter derives from the Hollywood Hospital group, though the symposium antedates their publication (17). Ed.

of *S*. The most significant effects of the drug seemed to occur when *S* was allowed to follow his own spontaneous train of thought.

The technique of administration used with most of *Ss*, therefore, is based on an attempt to provide a relatively permissive, comfortable and accepting atmosphere. *Ss* were encouraged to give themselves up to the effects of the drug as much as possible. All the drug sessions were conducted in a small, sound-proofed room that was very comfortably furnished with a couch, carpet, pictures on the wall, and a stereo record player. *Ss* were usually provided with an opportunity to listen to music or look at visual stimuli. An attempt was made to reduce the amount of stress to a minimum. Someone was with *S* during most of the day. He therefore had the opportunity to talk with someone if he wished, although it was made clear to each *S* that he need not talk if he did not feel like it.

The dosages used have ranged from 50 to 200 micrograms, with the most frequent dosage being 100 micrograms.

Volunteer *Ss* and patients were treated in much the same manner, except that the patients entered the sessions with a very different set. The LSD sessions were presented to each patient as an adjunct to his regular treatment, and his therapist was usually present during a part of the time. The role relationship between the experimenters and the patients was naturally quite different from the role relationship between the experimenters and the professional volunteer *Ss*. When a professional volunteer takes LSD in the presence of a colleague he is frequently thrown into considerable conflict as to what his role should be. This often presents a rather difficult situation for the person who is administering the drug as well.

In describing the effects that we have observed under these conditions and with these *Ss*, it is important to distinguish between two classes of effects. One class is the immediate effects, i.e., those which occur within eight to twelve hours after ingestion of the drug. The other class consists of the more lasting effects, i.e., those which persist for an indeterminate period after the immediate effects have dissipated.

In studying the immediate effects, the approach has been to observe the subject's relatively spontaneous behavior while he is under the influence of the drug and also to analyze the tape recordings made of each drug session.

Effects

The immediate effects which have been observed can roughly be classified into five categories:

- 1) Mood and affect;
- 2) Interpersonal behavior;
- 3) Sensory and perceptual effects;
- 4) Intellectual functioning and reality testing;
- 5) Intuitive-intellectual effects.

In terms of *mood and affect*, Ss have demonstrated a wide range of reactions. Often an emotional lability is seen which ranges from tearfulness to euphoria. There is frequently an increased intensity to emotions in general. Feelings of well-being or euphoria, which many subjects have reported, tend to merge into feelings of omnipotence. Sometimes there appears to be an increase in anxiety; while at other times anxiety is decreased, and there is a feeling that previously threatening things can be talked about. Ss tend to show an increased concern with the feelings and events of the immediate moment, and sometimes there is a marked lack of concern about the past and future.

In terms of *interpersonal behavior*, Ss typically have manifested an increased sensitivity to their interactions with others. In many Ss this sensitivity has taken the form of being easily hurt or feeling neglected. With the majority of Ss there has been an enhancement of the relationship with the person who is conducting the experience. Sometimes patients have developed paranoid constructions about being manipulated.

The following varieties of *sensory and perceptual effects* have been relatively common with our Ss: there is an increased sensitivity to sounds and visual stimuli in general. Distortions of the body image (visual distortions which are usually illusory but sometimes hallucinatory) also occur. There are synesthesia with all sorts of combinations of sensations; e.g., music may produce visions of color, pictures may produce sounds, and odors may produce visual and auditory images or somatic sensations. There are transformations of the time sense, such as time standing still, racing backwards or forwards, or dragging interminably. The external world becomes unstable, receding and approaching, flowing and vibrating.

In the area of *intellectual functioning and reality testing*, LSD usually has resulted in a lability of thought processes which frequently has manifested itself as a flight of ideas. There often has been a marked disruption of the organization of thoughts and concepts. In attempting to deal with this disorganization, *S* has often come up with new, sometimes insightful, ways of conceptualizing his experiences. Unless the LSD therapist is equally at home with both old and new ideas he may overlook creative aspects of the patient's thinking and label it all as merely confused or psychotic. The therapist's confusion may in turn confuse the patient.

There is still a fifth class of effects which could be termed *intuitive-intellectual* effects. Included in this category are experiences such as a feeling of oneness, a feeling of "understanding" life and existence, religious experiences, transcendental experiences, or a strong inclination to think along philosophical lines. Such experiences have been reported relatively frequently and appear to be a combination of both emotional and intellectual functions. Patients who have had vivid experiences of this type have tended to value them highly and often have expressed the feeling that such experiences seem to have some sort of lasting beneficial effect.

This list of immediate effects covers a wide range, and frequently *S* in a single drug session will experience a large number of them. It should be noted that many of the effects mentioned are contradictory. In this connection it has been observed that *S* will often shift from one experience or emotion to its opposite in a very short time.

Response Variation

Individuals differed greatly in their responses to LSD. At a given dosage some *Ss* reported that they experienced little or nothing out of the ordinary, while others reported extremely intense and unusual experiences. Of those who did report significant effects, some experienced predominantly unpleasant effects, while others felt the experience was primarily pleasant; some were principally concerned with changes in the body image, while others became preoccupied with esthetic experiences on philosophical issues. It was also noted that the same individual might show considerable variation in his response to LSD from one session to the next.

In general we have felt that the more positive kinds of experiences have something to do with *S*'s willingness or ability to give himself up to the effects of the drug. If *S* is very concerned about maintaining control or fighting the effects of the drug, the experiences can be frightening, sometimes terrifying.⁵ By and large, however, we have observed very few reactions that could be termed blatantly psychotic. It would probably be fairly easy to induce more psychotic-like behavior if *Ss* were put into a more stressful situation and made to feel more insecure.⁶

In studying the effectiveness of LSD as a therapeutic adjunct, attention has been focused on what kinds of possible *lasting* effects might occur as a result of one or more LSD experiences. Often the more lasting effects seem difficult for the patient to describe. A study of *Ss'* reports along with observations of their behavior suggests that the following kinds of changes occur as a result of a series of therapeutically oriented LSD sessions: *S* becomes less anxious, less rigid, more spontaneous, more tolerant of ambiguity, more appreciative of esthetic and symbolic modes of expression, more capable of enjoying intuitive, irrational experiences, and less concerned over the past and future. Whether these changes are of a universal order remains a question for further investigation. It is conceivable that they are a function of the particular sample of *Ss*, many of whom tended toward emotional constriction, intellectualization and ruminative thinking.

In addition to these general kinds of changes, there are specific changes that have to do with the individual's dynamics. Often *S* may gain a new perspective on himself or gain an important insight into his defenses which results in a change in behavior. Sometimes, however, what the patient calls "insight" turns out to be an irrational, ineffable and peculiar experience that seemed to have a very important personal meaning to *S*. As an example of this, a man felt during his initial LSD experience that his joints were somehow grinding together. He felt that all of the rough edges in his joints were ground smooth, and this gave him a "well oiled" feeling which seemed to persist for weeks afterwards.

⁵ Beringer (4) noted the same thing for mescaline in 1927.

⁶ Dr. Terrill's conjecture was soon thereafter confirmed. An associate put himself in an extreme stress situation by privately consuming 200 micrograms of LSD which he had stolen. It took him two years for a full recovery.

One of the most intriguing aspects of the use of LSD as in psychotherapy is that when positive changes have occurred they often seem to have occurred in terms of the *person's value system* rather than in terms of recovered memories, interpersonal insights and the like, as is usually the case with more traditional forms of psychotherapy. Such changes are apparently in the direction of a higher valuation of esthetic, creative, philosophic and perhaps even religious interests.

It should be pointed out that although the use of LSD in therapy often results in changes that one would not get otherwise, this does not obviate the need for regular psychotherapeutic procedures. Although the patient may make significant gains as a result of an LSD experience, we have concluded that the experience needs to be followed up with regular therapeutic sessions in order to work through the insights that have been gained and the behavioral changes that have been initiated.

How effective is LSD as a psychotherapeutic agent? Ratings of improvement based on therapists' judgments and in some cases pre- and post-LSD psychological tests indicate that 15 of the 29 patients who received one or more LSD sessions benefited therefrom. This evidence is far from conclusive, however, since these patients were receiving regular therapy at the same time and since no control group was utilized. Plans had been made at the Mental Research Institute to undertake a more complete and well controlled study of the therapeutic effectiveness of LSD, but unfortunately we have not yet been able to obtain sufficient financial support to carry these out. Although much has been written on LSD as a therapeutic adjunct, there is still a dearth of well controlled studies with adequate measures of change.

Comparable data are not available on our professional volunteers. We were primarily interested in learning from these Ss their theoretical interpretation of their experiences and their judgment as to how LSD might best be utilized. We found it difficult to obtain post-LSD reports from these Ss, and their reports when obtained were oriented more toward the personal experience rather than to theoretical interpretation. Even though these sessions were not therapeutically oriented (though conducted in a therapeutic setting) many professional Ss reported increased feelings of well-being and confidence. For example, one volunteer had the annoying habit of being

late and consuming even more time with apologies. Since the LSD experience she has been observed to be less often tardy—and if late she is less guilt ridden and apologetic.

Our work with LSD so far has perhaps raised more questions than it has answered. One of the most important of these is the question of the relationship between personality factors and response to LSD. Our attempts to predict the kind of LSD response a person would have, based on pre-LSD test and interview data, have been discouraging. For example, three patients had Holzman, TAT, and historical evidence from which the only possible prediction was a psychotic break under LSD. On the contrary, they seemed to have richly rewarding experiences.⁷ It seems clear that LSD can provide very therapeutic experiences for some, although more research is needed to determine what kind of person is most likely to benefit.

Another unanswered question is the relationship between the nature of the experience and its aftereffects. Many workers have assumed that positive experiences are most helpful and that transcendental experiences have the greatest therapeutic potential. And yet there are instances where frightening or terrifying experiences have had beneficial aftereffects. Several of our professional Ss have remarked that they believed that much of the beneficial effects of LSD was due to a person's having faced a stressful and ambiguous situation and worked it through satisfactorily.

Summary

Exploratory LSD studies carried out at the Mental Research Institute over a two-year period have suggested that LSD may prove to be a very powerful tool in speeding up movement and

⁷ A three-year follow-up on this trio is instructive. Dr. P.S. made a dramatic improvement following LSD, but two years of family therapy were required to sustain it. His pre-LSD Holzman shows many torn, syphilitic, bleeding genitals and ani. The post-LSD Holzman is more typified by nymphs dancing with satyrs.

Mrs. B.L.S. could not tolerate sexual relations with her husband. He had had a vasectomy and she thought him abnormal. Following LSD their sex life became satisfactory until he suggested anal intercourse; this suggestion restored her frigidity which has since remained inviolate.

Mr. I. M. suffered from a three-year spell of impotence, but after LSD was able to have normal sexual relations twice in an evening. His wife cooperated fully. The next morning she upbraided him bitterly for having raped her while drunk. Three years of therapy were required to restore his potency.

overcoming resistances in psychotherapy. LSD did not, on the other hand, show promise as a diagnostic tool. When therapeutic changes did occur they often were of a qualitatively different order than those which occur in traditional psychotherapy. Under the influence of LSD, the individual goes through highly intense and unusual experiences which may well change the way in which he views his life.

LSD, Alcoholism and Transcendence

CHARLES SAVAGE, M.D.

"Visit either you like: they're both mad."

"But I don't want to go among mad people," Alice remarked.

"Oh, you can't help that," said the Cat.

"We're all mad here. I'm mad. You're mad."

"How do you know I'm mad?" said Alice.

"You must be," said the Cat, "or you wouldn't have come here."

The Cat recognized what was not apparent to his Victorian contemporaries. We are all part of a sick society, troubled members of a troubled world. Inevitably many people look to drink for salvation. For some it is an imperfect salvation, leading to the couch, the hospital or the grave.

Our plight is not unlike that of the nineteenth-century American Indian. His land was stolen, his livelihood lost, his life forfeit, his language, customs and beliefs were all deliberately undermined by the white man in the name of Christ, Culture and Civilization. Confronted with physical and spiritual annihilation, the "red man" faced the future with grim foreboding. Many Indians turned to drink; but others turned to peyote, the Aztec counterpart of LSD. Seemingly they turned to peyote for inner strength. "Peyote gave them faith in a new power and a new road that they might follow from the path that was still in their hearts and mind to a feared and little understood future. The meeting of compelling forces, conscious and unconscious, of racial memories, the loss of tribal security and religious beliefs, added to the drive of the creative urge to make fine in form and color the spirit of the Indian" (26).⁸

⁸ Monroe Tsa Toke, from whom this quotation is taken, has done paintings which are unquestionably the best illustration of the "peyote ritual" and the peyote visions.

Slotkin (24) has reported that peyote has remarkable physiological and psychological characteristics so that when taken under proper conditions, the worshiper experiences a revelation. In most cases this takes the form of a vision. In some cases, it is a mystical state, the unification of all immediate experience with "God."

The connection of peyote and LSD is not only in their psycho-physiological properties; it happens also that both have been and are used in the treatment of alcoholism. As early as 1907 anthropologists (24) had reported that peyote was a cure for alcoholism; and in 1909 it was reported of the Winnebagos that of the degenerate drunks of thirty years ago (1879), those who had turned to peyote had now become the most successful, healthy and outstanding members of the Winnebago community.⁹

Today (1960) recovery rates as high as 70 percent are being reported with the LSD therapy of alcoholics.¹⁰ Rather than attempt a critical evaluation of these claims, I propose to deal here with the question: How may LSD be of help to the alcoholic?

⁹ A controversy still rages about peyote and its value for alcoholism. Slotkin quotes Hensley [1908] with approval: "It [peyote] cures us of our temporal ills as well as those of a spiritual nature. It takes away the desire for strong drink. I myself have been cured of a loathsome disease too horrible to mention. So have hundreds of others. Hundreds of drunkards have been dragged from their downward way." La Barre, however, is cynical about the antagonism of alcohol and peyote. "One can eat lobsters one day and ice cream the next, but one ought not eat them the same day (15)." Radin's *Crashing Thunder* (19) gives an eloquent account of his cure of chronic alcoholism with delirium tremens by the use of peyote. Radin himself remained skeptical.

"So completely did all those who joined the peyote cult give up drinking that many Indians and whites were at first inclined to believe that this was a direct effect of the peyote. However, this is an error. The correct explanation is that John Rave, the leader of the cult, gave up drinking when he became a convert and included this renunciation of all liquors in the cult which he so largely moulded and dominated. If any additional proof were needed it can be found in the fact that as Rave's personal influence decreased and as the membership increased the number of people who drank liquor and ate peyote at the same time increased." But Radin overlooks the fact that John Rave gave up drinking because of peyote!

¹⁰ The figure of 70 percent is taken from Hoffer (2) and covers a five-year period. The data on which the present paper is based, however, derive from a series of 20 hospitalized alcoholics (in addition to the M.R.I. patients). They were treated in the same manner described by Terrill except the dosage ranged from 150 to 500 micrograms. Fifty percent had stopped drinking at the time of this symposium. Unfortunately follow-ups could not be obtained.

Long ago William James (14) made the comment: "The cure for dipsomania is religomania."

James quoted the following example from a drunkard, S. H. Hadley: "One Tuesday evening, I sat in a saloon in Harlem, a homeless, friendless, dying drunkard. I had pawned and sold everything that would bring a drink. I could not sleep unless I was dead drunk. I had not eaten for days, and for four nights preceding I had suffered with delirium tremens or the horrors from midnight until morning. I often said, 'I will never be a tramp. I will find a home in the bottom of the river.' But the Lord so ordered it that when the time did come, I was not able to walk one quarter of the way to the river. As I sat there thinking, I seemed to feel some great and mighty presence. I did not know then what it was. I did learn afterwards that it was Jesus, the sinners' friend. I walked up to the bar and pounded it with my fist 'till I made the glasses rattle. Those who stood by drinking looked on with scornful curiosity. I said I would never take another drink if I died in the street." And so complete was Hadley's conversion that he never did take another drink.

As an example of a conversion reaction with LSD followed by abstinence: An alcoholic woman was given 150 micrograms of LSD; during her session she fell silent. She closed her eyes and seemed to fall into a trance. She woke with a start, and said: "I thought I had been killed. I thought I was tried, dragged in chains before God, condemned and taken out to be executed." She awoke feeling that she had been reprieved, that she had been saved.¹¹

Another patient had had doses of 100 to 200 micrograms of LSD without noticeable benefit. She laughed and danced and listened to jazz records. She once described that she had talked with the devil and had thrown in her lot with him. So she went the devil's way, increasing her drinking and taking "dope." Her final session was with 500 micrograms. She talked to the devil and told him: "Look, I tried it your way and what has it got me?" She then had the feeling that "God" reached out his

¹¹ Following this experience she stopped drinking, became interested in psychotherapy and I referred both her and her husband to a psychiatrist. He was an ex-alcoholic who had a spontaneous religious conversion and he insisted hers was synthetic and not genuine. Three years later he finally proved his point. My sympathies are somewhat with her. After listening to him on the phone for long periods in the late evening I have often found a drink very soothing.

hand to her, and she was debating whether or not to grasp it. Following this experience, the patient seemed to be in a psychotic or depersonalized state, became very depressed and planned suicide. She wrote a suicide note in the midst of which she fell asleep, awoke in the morning and found she was still alive. The last word she had written in her suicide note was "church" and she thought perhaps a miracle had occurred.

This patient's experience also illustrates the need for careful aftercare in order to prevent suicide and psychosis.¹²

James' explanation of such experiences is compelling: "The difference between a sudden and a gradual convert is not necessarily the presence of a divine miracle in the case of one and of something less divine in that of the other, but rather a simple psychological peculiarity, the fact that in the recipient of the more instantaneous grace we have one of those subjects who are in possession of a large region in which mental work can go on subliminally and from which invasive experiences abruptly upsetting the equilibrium of the primary consciousness may come."

Some of these patients (treated with LSD) equate forgiveness of sins with healing. The relentless conscience has relented and now the patient is freed of guilt: Thus the old cycle of drink to still guilt, and drink giving rise to guilt, is broken. With the slate wiped clean, the patient is free to deal with the guilt of the moment rather than the guilt of the accumulated years. Borrowing from analytic metapsychology we might say the unconscious superego has become conscious, though it is still projected onto God rather than recognized as part of the self. Made conscious, it has lost some of its minatory quality.¹³ The conversion reaction is only one type of spiritual experience which might lead to recovery from alcoholism; but there is still another and more basic one: the mystic experience. James has suggested that one of the motivations for drinking is to achieve an actual mystic experience:

"The sway of alcohol over mankind is unquestionably due

¹² After a period of accelerated drinking, dope taking and dalliance, this patient straightened out, returned to the church, and according to last report (1961) had made a good adjustment for two years.

¹³ The mere evocation of the superego into conscious form is not in itself curative. It occurs in terrifying fashion in delirium tremens, and can occur in terrifying fashion with LSD. In the writer's opinion, it is the support of the therapist and his ability to maintain contact with the patient that makes the difference in the outcome.

to its power to stimulate the mystical faculties of human nature, usually crushed to earth by the cold facts and dry criticisms of the sober hour. Sobriety diminishes, discriminates and says No. Drunkenness expands, unites, and says Yes. It is in fact the great exciter of the Yes function in man. It brings its votary from the chill periphery of things to the radiant core. It makes him for the moment one with truth. Not through perversity do men run after it. To the poor and unlettered it stands in the place of symphony concerts and of literature; it is part of the deeper mystery and tragedy of life that whiffs and gleams of something that we immediately recognize as excellent should be vouchsafed to so many of us only in the fleeting earlier phases of what in its totality is so degrading a poison. The drunken consciousness is one bit of the mystic consciousness and our total opinion of it must find its place in our opinion of that larger whole." A longshoreman put it more simply: "If it weren't for whiskey, a poor man would never know how a rich man feels."

What, then, is the need for this mystic experience or the transcendental experience? I believe that Fromm has given us the answer. The alcoholic suffers from alienation, from the "sickness of the soul." All that has been worthwhile in him has been projected onto the outer world, whether it be God or manna. All that is base is retained within himself. "What is his problem? Is it his drinking or is his drinking only a symptom of his real problem, his failure to live a meaningful life? Can man live with this degree of alienation from himself with so much hate and so little love without feeling inferior and disturbed?" (12).

An illustration of this appeared in *Life* sometime ago (1959) under the ironic title "The Good Life." The people therein portrayed are so discontented with themselves that they are continually racing after power saws, power motors, power boats. They cannot stand being with themselves for a moment. They are alienated from themselves, alienated from their universe. Their transcendental or creative function is entirely blocked. Compare them with Wordsworth:

Nuns fret not at their convent's narrow room;
And hermits are contented with their cells;
And students with their pensive citadels:
Maids at the wheel, the weaver at his loom,

Sit blithe and happy; bees that soar for bloom,
High as the highest Peak of Furness Fells,
Will murmur by the hour in foxglove bells:
In truth, the prison, unto which we doom
Ourselves, no prison is:

Unlike Wordsworth's ideal, modern man is so completely imprisoned and alienated that for him the happy idle hours become a rat race, and the time waster spans his weekend with drink. Many drinkers drink because their lives have lost purpose and meaning. The old drunk might drown his sorrows; the modern drunk fills the emptiness of his existence.

The alcoholic attempts to find himself, to fulfill himself with drink; but the attempt fails and now the guilt over drink and the wasted opportunity has him trapped. How then may LSD help with this situation? It may provide a genuine transcendental or mystic experience instead of the spurious one "bit of mystic consciousness" which the alcoholic has been seeking. The artificial distinction between subject and object, self and world, conscious and unconscious, ego, id and superego are all abolished. The person is at one with the universe. In his mystic selflessness he awakens with a feeling of rebirth, often physically felt, and he is provided with a new beginning, a new sense of values. He becomes aware of the richness of the unconscious at his disposal; the energies bound up in and by repression become available to him.

One patient during LSD was drawn into a mystic experience by the sound of a floor buffer turning round and round in the passageway. She was drawn into a mystic participation with the writer and with God. Yet she struggled for her individuality, even as Jacob wrestled with the Angel. Afterwards she said: "I recognized after this that I was strong, that I didn't need to be afraid, that I didn't need to drink." She and her husband had been refractory members of Alcoholics Anonymous for years. Now that she has stopped drinking the husband has started again.¹⁴

What happens when we seek transcendence with LSD? Once we open Pandora's box, we cannot always control what flies out. The LSD experience may strip the patient of his capacity for lies and rationalization; he may see himself in all

¹⁴ She has since found it prudent to bolster her new found strength with antabuse, to counteract her husband's importuning her to drink.

his psychological nakedness. To expose him so violently and suddenly to his shortcomings may only increase his guilt to an intolerable degree and leave him very depressed. He should, one would think, have at least some "glimpse of heaven" if he is to be "saved." Some inner strength, some hope, some creativity and some positive feelings must be revealed to him.

This brings us forcibly to the dangers of LSD treatment. The transcendental experience may open up avenues of creativity but it is not creativity itself; the experience of revelation while present may lead the person to confuse fantasy with actual achievement. Unless the constructive aspects of the experience are sufficiently stressed, the individual may not have the strength to face himself stripped of all his rationalizations and projections, a "herring lying in the gutter" (2). Therefore, unless he has some awareness of "God's" mercy, unless he can come to terms with himself as through the mystic experience, and unless he develops new and free energy from the unconscious to alter his life situation, he may develop not only a depression but a frankly paranoid reaction. The intervention of the therapist makes the difference between a helpful and a damaging experience. The therapist need arrogate no religious attributes to himself; indeed he must resist the temptation to believe in the omnipotent role in which he has been placed. For if he does not, he will then reinforce, rather than alleviate the pathological alienation which he is striving to overcome.

There is another danger which is shared with the peyotists. For years government experts and anthropologists have been warring as to whether peyote is or is not harmful. In point of fact the writer has been able to find authentic evidence of only one peyote psychosis, this on a brief personal visit to the Navajo reservation. But the circumstances are instructive. This was a young man who had branched out on his own. He had his own private stock of peyote which he was nipping on the side, instead of taking it during the highly formalized peyote ritual.¹⁵ In the same manner self-experimentation with LSD is clearly dangerous. LSD strips off the protective barriers of the ego and all sensitivity and perceptivity is heightened. The effect of any input is heightened, so that the drug has great

¹⁵ The writer has found that warnings against self-experimentation (22) are ineffective: it is like telling children not to put beans up their noses.

potential for good and evil. It is possible to induce or reinforce unusual beliefs which may alienate the individual from his society at a time when he desperately needs it.

Finally, LSD causes an inflation of the ego which may be an effective antidote for low self-esteem. Low self-esteem, of course, has many roots. All Good is projected onto God; all Bad is retained in the form of original sin within oneself. There are other problems that derive from the Protestant ethic. There is the stress on the outward evidence of grace as seen by visible evidence of prosperity, the stress on social mobility, the existential guilt arising from the fact that few reach their actual potential: all this adds up to a sort of mass, low self-esteem, a cosmic sense of inferiority, which is actually increased by material achievement and accession of material goods. Ordinary psychotherapy brings out a person's shortcomings and not his assets. But LSD allows a person to face his shortcomings with honesty, and at the same time experience some of the wealth and reservoirs which lie within him. We can perhaps promise that the Mute Inglorious Milton experience the raptures felt by Milton, even if he cannot write his poetry.

We should also recall that Vergil guided Dante into the Inferno and returned him safely, chastened and enlightened. Those who would use LSD should do as well for their patients.

Case History of Excessive Drinking with Improvement Following LSD

This was a 30-year-old radiologist who consulted the writer in 1959. He complained that for the past year he had nightly drunk himself to sleep, and then awoke with nightmares in the middle of the night. His wife would become enraged at being awakened and he would spend the rest of the night crying. He was depressed, unable to work. However, his chief complaint, of years duration, was an inability to feel or experience. "It was as if I was inside a glass shell. I mean I could see out and people could see in, but I couldn't talk or feel."

The patient was an only child, whose mother had died when he was an infant. He was raised by foster parents until the age of four and then repossessed by father and stepmother. His relations with them were distant. His father reportedly insisted on high standards of intellectual performance, always blamed,

never rewarded or praised. Raised as a strict Catholic, the patient married out of the Church and was cut off by his family. He abandoned the Church but it made little difference: as he expressed it: "When I was on a religious kick, it was 'I'm a sinner'; and essentially now it's 'I'm a neurotic'." His purgatory was in effect merely moved from the future into the present. Alienated from God, nature, man, church, mother and family, he tried for reconciliation by conquering. His friends he subdued with words, his patients with his X-rays, and the universe with his theories. Only once in his life had he overcome his alienation. During sexual relations with his secretary, out in the moonlight, he felt "At that instant I had contacted the universe." He hoped for a repetition of this with his wife, and had the unwisdom to tell her about it on their honeymoon. But he felt nothing for her, could not love her. To add to their misery she became pregnant and he had a psychotic breakdown. She aborted but never forgave, never forgot nor allowed him to forget. He wanted a reconciliation but his efforts to force it only estranged them further. The patient said that he had taken to drink to recapture the experience, but it failed.

Psychotherapy seemed futile; words were used as hostile ammunition and playthings; he fielded each interpretation perfectly and returned the appropriate riposte, for he had read and was well versed in Freud, Jung and Watts. Yet when he left the hour, he had forgotten everything. It was the patient's suggestion that LSD be tried, which was done after fourteen preliminary psychotherapeutic interviews.

He began the session by using the drug as a platform to preach his private philosophy. "So anyway this sort of thing, Goedel's proof, the Heisenberg principle of indeterminacy, the insolubility of any mechanical problem that contains more than two bodies by a method of other than successive approximation. . . . There's *me* sub one and *me* sub two and *me* sub one gets in the way of *me* sub two."

In order to turn off this stream and direct him inward we tried some abstract paintings and then Bruckner. "Anyway I'd like to hear a little Bruckner now. Oceanic feelings. Da dum da da dum. That is what Bach did for a living, Bach did for kicks."

Bruckner's music was an effective stimulus: the patient became ill and then suddenly experienced the nightmare of

which he had complained. He shook with fear, trembled and sobbed: "I'm afraid, I'm afraid. I keep looking; there is nothing there; what am I afraid of?" I replied: "Perhaps that's what you are afraid of: nothing." With this the nightmare disappeared, and years later the patient reported that it had never returned. At that moment he reported a mystic enlightenment, a kind of *satori*. He experienced feeling, closeness with the therapist, with himself and the universe (and, after the session, with his wife). In the evening he telephoned to tell me how grateful he was. He had experienced completely successful sexual relations for the first time. He began to pour his energy into his work, and nightly drinking sessions were no longer required.

To the therapist he seemed profoundly changed, and for the better. His wife, on the contrary, became much upset, bitter, angry and depressed. She reminded the patient continuously: "You're no different; besides it won't last; you'll see." A self-fulfilling prophecy. We thought to rectify the situation by repeating the LSD experience with the patient, by giving the wife an LSD experience, and then arranging a joint LSD session. The first two were accomplished, but not the third. She refused, saying it was a terrible experience. (During the LSD the observer would have thought she was having a delightful experience.) Eighteen months of intensive conjoint family therapy were required before she could accept the possibility of his being well.

Three years after the first consultation we learned that he was a professor of radiology at a leading university; and the couple was happily expecting a baby.

LSD and the New Beginning

DONALD D. JACKSON, M.D.

The experience of LSD and the new beginning is similar to what the existentialist Ellenberger (10) has called the Encounter: "Encounter is, in general, not so much the fortuitous meeting and first acquaintance of two individuals, but rather the decisive inner experience resulting from it for one (sometimes for both) of the two individuals. Something totally new

is revealed, new horizons open, one's Weltanschauung is revised and sometimes the whole personality is restructured. Such encounters are manifold, perhaps with a philosopher who reveals a new way of thinking, or with a man of great life experience, of practical understanding of human nature, of heroic achievements or independent personality. An encounter can bring a sudden liberation from ignorance or illusion, enlarge the spiritual horizon and give new meaning to life."

To the writer nothing better exemplifies how LSD can be useful to us. It can provide us with an encounter, a new experience which will enlarge our horizon and give new meaning to life. These experiences are a part not just of therapy, but of life itself.

While in analytic training, I took a three-day vacation during which I tried a new role—that of a salesman. I happened to meet another salesman and played the role quite enjoyable for the whole weekend. For my analyst this was an acting out of the transference, but I think this view expresses only one side of the coin. Not being a doctor, not being a psychiatrist even for a few days forced me to develop different sets of behavioral tactics and with them a different aspect of me that was enriching. Chancing to meet another person with whom I was compatible reinforced the behavioral change. I feel that there is an analogy in this experience to what *can* happen with LSD. The new experience under LSD can be reinforced by social experiences and further experience with the therapist. Without this reinforcement the LSD experience gradually pales and dies away; it becomes a memory, not a personality change.

Not everyone is grateful for a new experience. Galileo's contemporaries refused to look at the moons of Jupiter through his new telescope. And some of our contemporaries refuse to contemplate the intricacies of the LSD experience, or having contemplated them are unable to process the new data. For them the experience is unpleasant as is the inability to handle new data. For many this experience cannot be handled, and leads to grandiosity and rationalizations.

Some of our professional subjects and patients, learned philosophers, psychologists and psychiatrists, are unable to relax and enjoy the revelations of LSD. Instead of marveling: "My God, I've never been in this land before," they explain, interpret and deny all in terms of their conventional frame-

work. Instead of enjoying the beautiful simplicity of planetary motion, they pile epicycle on epicycle. They cling desperately to the old familiar terminology; they maintain a death grip on their "cathexes" and "repressions"; and clinging to the old, they cannot let go and be intrigued with the new. Acute discomfort is their lot, if they cannot hammer their data onto the cross (chisquare) of their old methodology.¹⁶

The early references to the LSD experience as a schizophrenic-like psychosis were, in my opinion, the natural outgrowth of casting the new in the old mold. If the therapist views the experience as a psychosis he unwittingly helps the patient develop a psychosis not through suggestion alone but also because he cannot offer the patient a framework to handle the new experience. The therapist must furnish adequate help in processing the new data, or a paranoid reaction, ranging from transitory suspicion or accusation to paranoia of several months, may set in.

In early work with LSD, when the therapist failed to provide the Encounter, psychotic reactions were inevitable. This led to over-generalization of the effects of psychotomimetic drugs. (More accurately, perhaps, we should speak of psycholytic drugs given by psychosogenic therapists.) The therapist provided the paranoid reaction by withholding vital information; just as with mental illness *sui generis*, society and the therapist foster the paranoid reaction by withholding vital data. And often the patient fosters this by refusing to extract the data or, having extracted them, refusing to look at them.

Bavelas (3) has devised ingenious experiments to demonstrate the effect of withholding data. He has given insolvable problems to a highly motivated, highly intelligent group of engineers; they were encouraged to solve the problem, and inevitably came up with an erroneous answer. The confrontation that they had the erroneous solution and that they could not have solved the problem, far from providing enlightenment, only led them to hold to their false solution with delusional and dogmatic intensity, increasingly buttressed by false rationalizations.

¹⁶ The logical conclusion of Jackson's remarks would be to jettison all previous models. However, in the discussion he implied that a model borrowed from psychoanalysis and existentialism might be constructed. Viktor Tausk (25), in his essay on the origin of the influencing machine, describes the human need for causal explanations and the fantastic distortions of familiar explanations to process unfamiliar data.

Having suffered once from the withholding of data, they now refused to process the new data. Could they then have been tested with LSD would they then have had sudden enlightenment, or would they have developed fixed paranoid ideas of being played with? Almost surely it would have depended on the Encounter with the therapist.

We speak of a new experience with LSD. What does a new experience mean and how can it be beneficial in specific terms? Let me give an example of a patient, a professor, a man of brilliant promise yet suffused with hopelessness because of an abiding fear of insanity. He had once the misfortune to consult a world-famous analyst about a marital problem, and had been told that he was a pseudo-neurotic schizophrenic and unanalyzable. This had been a somewhat less than happy encounter. Given a hopeless prognosis and refused treatment, he was left for years to alternate between lethargy and desperation. In desperation he consulted me and in desperation we tried LSD after a long period of counseling and preparation. His first session (100 micrograms) was uneventful, devoted mainly to a preliminary survey of the unknown and the establishment of trust in the situation. In the next session (150 micrograms) he plunged boldly into the psychotic state, became wildly agitated and was forcibly restrained. Together we came face to face with the insanity he had feared and together we mastered it. He was able to take the wraps off and let himself go because he knew that he and I could see it through together. Instead of finding nothing but the monster of pseudo-neurotic schizophrenia thinly veiled in professorial robes, he found a phantom which he could discard, and he also found his real self, a living human being. A far more fortunate encounter than his first.

Sometimes this may be followed by depression. It has happened where families have not been able to support the new experience and the new changes, where for them the new beginning is fraught with danger.¹⁷ Now when we give LSD we insist that the marital partner be involved in the situation lest divorce or depression supervene. Another patient had a remarkable—and unfortunate—experience. He was verbally attacked so roundly by his depressed wife that within a month's time she had brought him lower than when he started. Two

¹⁷ This is a danger common to many therapies, including psychoanalysis (13).

years of family therapy were required to restore what had been lost in a single day.¹⁸

The Encounter may be illustrated by the following brief case history.

The patient was a 35-year-old accountant who had been in intensive psychotherapy for five years because of chronic depression and crippling obsessive traits. He had had a brief psychotic reaction and had made an abortive attempt at self-castration. His oldest sister was a semi-invalid; he was placed in a position of great responsibility for her; yet he had always to be deferential and to accept continuous criticism. He had no pleasant experiences of adolescence, and no dating. At the beginning of therapy he complained of intense loneliness. Both patient and therapist were frustrated by his meager progress. His solid intellectual defenses were refractory to interpretation. Occasionally he made efforts to improve his isolated social position; each time he neatly sabotaged the effort. He improved slightly, worked a little better, and became a little less depressed; but if anything his isolation and loneliness were intensified.

Because of the complete affect block we decided that he should have LSD (despite the history of a previous psychotic break). He agreed and was given 100 micrograms of LSD. He seemed more relaxed and a bit more happy. Yet, though we focused on his relations to his father, there was little affect, little recall and no fantasy.

The writer thought that surely there must be some fantasy available in this constricted personality. What kind of a fantasy might such a boy, with such a father, have had? Surely he would have been pleased to have buried his father in a shallow grave, supine; and if Father died like Balzac's M. Beaucoq with his lance erect (because he was hanged) so much the better; and if he reverentially mowed the grass over his father's grave, and if each passage of the blades over his father's grave cut a little deeper, there might be a gradual diminution, or shearing off of the parental authority, a trimming of the father imago. I shared this fantasy with the patient and suggested that he might well have had such a one. The effect was electric. He exploded with laughter. The feelings and fantasies about father came pouring out, as though Moses had smote the rock.

¹⁸ See footnote 7 (first patient) and Savage's illustrative case history, above.

For the balance of the afternoon we reveled in an exchange of fantasies about his father.

From that day he was a changed man. Previously he had been a Milquetoast at work, whom everyone pushed around. Now he became self-assertive and positive. He no longer let advantage be taken of him. He was poised and comfortable. It occurred to him he might do better working by himself. During the next LSD session (150 micrograms) he was able to continue the work of the preceding session. With the dread father laid to rest, he could relive his adolescent days with the therapist, not as they had been, but as they might have been. He expressed for the first time the desire for a girl. In the month following, astounding changes developed. He developed a sense of humor; he became efficient; he began to date; he made plans to leave his job and set up his own business, and this he actually accomplished. He enjoyed dating and experienced intense sexual feelings. In therapy he expressed the desire for marriage and children. He struck up a friendship with another man, with whom he discussed topics formerly taboo: sex and women.

Following LSD he began to have intense dreams, sometimes pleasurable, often in color, which he had not had before.

In seventeen (now nineteen) years of practicing psychotherapy I have never seen as much change in an individual with a rigid obsessional character. The change has been permanent. While it has leveled off, there has been no back-sliding since our first Encounter using LSD.¹⁹

Summary

The LSD experience is considered a complex transaction of the amount of material given, the psychological and physical en-

¹⁹ Dr. Jackson's fantasy may have been suggested by one of our patients who had the hallucinatory experience of roasting his father over a slow fire in Hell, experiencing the most intense glee as he basted him. Despite its effectiveness, one is hard put to explain its success. But it seems to have combined an accurate representation of the patient's feelings with complete nonsense. Thus it derives much of its force from its absurdity, much as the Zen masters drive a point home by a seeming absurdity. The combination of the LSD and the complete nonsense allowed the patient to see the complete absurdity of his continued subservience to his father, to get beyond it and to achieve the new beginning. A sensible interpretation would probably have re-mobilized intellectual defenses and demolished the whole LSD experience. (We have learned [1962] that this former patient is now president of his men's service club.)

vironment, the set or expectancy and the personality of both the patient and therapist. According to the structuring of the situation, a psychotic-like (psychotomimetic), a psychotherapeutic (in the sense of facilitating psychotherapy), or a transcendental reaction may evolve. The psychotic-like reaction may emerge where the intent is to produce and study psychoses, where excess stress and insufficient security is provided, and where the therapist fails to help the patient process new and unfamiliar data. The psychotherapeutic reaction is an intensification of the conventional therapeutic process and leads to an intensification of the traditional psychotherapeutic values of recall, reliving, insight and emotional release. These may be experienced where they had not been before the administration of LSD. The transcendental reaction is a temporary loss of differentiation of the self and the outer world. It may lead to a lessening of alienation, to a rediscovery of the self, to a new set of values, to the finding of new potential for growth and development and to a new beginning. This may be followed by a change in behavioral patterns, as in the cessation of drinking. If the environment (including therapist) supports these changes, they may become a part of the patient's habitual reaction patterns. Otherwise, the social matrix will remold the patient and the LSD experience will become a memory rather than an integral part of the personality.

An historical paradigm of the therapeutic use of LSD-25 is found in the use of peyote by the Plains Indians, in the treatment of alcoholism.

REFERENCES

1. Abramson, H. A. "Lysergic acid diethylamide (LSD-25). XIX: As an adjunct to brief psychotherapy, with special reference to ego enhancement," *J. Psychol.*, 41:199-229, 1956.
2. Abramson, H. A., ed., *The Use of LSD in Psychotherapy*. New York: Josiah Macy, Jr. Foundation, 1960.
3. Bavelas, A. "Group size, interaction and structural en-
- vironment." In Shaffner, B., ed., *Group Processes: Transactions of the Fourth Conference*. New York: Josiah Macy, Jr. Foundation, 1959, pp. 133-179.
4. Beringer, K. *Der Mescalinrausch*. Springer-Verlag, Berlin, 1927.
5. Busch, A. K., and Johnson, W. C. "LSD-25 as an aid in psychotherapy." *Dis. Nerv. Syst.*, 11:241-243, 1950.

7. Cantril, H. *The "Why" of Man's Experience*. New York: Macmillan, 1950.
8. Cohen, S., and Eisner, B. G. "Use of lysergic acid diethylamide in a psychotherapeutic setting." *A.M.A. Arch. Neurol. Psychiat.*, 81:615-619, 1959.
9. Cholden, L. S., Kurland, A. and Savage, C. "Clinical reactions and tolerance to LSD in chronic schizophrenia." *J. Nerv. Ment. Dis.*, 122:211-221, 1955.
10. Chwelos, N., Blewett, D. B., Smith, C. M., and Hoffer, A. "Use of d-lysergic acid diethylamide in the treatment of alcoholism." *Quart. J. Stud. Alcohol*, 20:577-590, 1959.
22. Ellenberger, H. F. "A clinical introduction to psychiatric phenomenology and existential analysis." In May, R., ed., *Existence*, pp. 92-124. New York: Basic Books, 1958.
23. Frederking, W. "Über die Verwendung von Rauschdrogen (meskalin und Lysergsäurediethylamid) in der Psychotherapie." *Psych.*, 7:342-364, 1953-54.
24. Fromm, E. *Psychoanalysis and Religion*. New Haven: Yale University Press, 1950.
25. Jackson, D. D. "Family interaction, family homeostasis, and some implications for conjoint family psychotherapy." In Masserman, J. H., ed., *Science and Psychoanalysis, Vol. 2: Individual and Familial Dynamics*. New York and London: Grune & Stratton, 1959, pp. 122-141.
26. James, W. *The Varieties of Religious Experience*. New York: Longmans, Green, 1902.
27. La Barre, W. *The Peyote Cult*. New Haven: Yale University Press, 1938.
10. La Barre, W. "Twenty years of peyote studies." *Curr. Anthropol.*, 1:45-60, 1960.
11. MacLean, J. R., MacDonald, D. C., Byrne, U. P., and Hubbard, A. M. "The use of LSD-25 in the treatment of alcoholism and other psychiatric problems." *Quart. J. Stud. Alcohol*, 22:34-45, 1961.
12. Osmond, H. "A review of the clinical effects of psychotomimetic agents." *Ann. N. Y. Acad. Sci.*, 66:418-434, 1957.
13. Radin, P. *Crashing Thunder: The Autobiography of a Winnebago Indian*. Berkeley: University of California Press, 1920.
14. Sandison, R. A., Spencer, A. M., and Whitelaw, J. D. A. "The therapeutic value of lysergic acid diethylamide in mental illness." *J. Ment. Sci.*, 100:491-515, 1954.
15. Savage, C. "Lysergic acid diethylamide." Research Report, Project NM 001.056.06. 02. Naval Medical Research Institute, NNMC, Bethesda, September, 1951.
16. Savage, C. "The LSD psychosis as a transaction of the psychiatrist and patient." In Cholden, L., ed., *LSD and Mescaline in Experimental Psychiatry*. New York: Grune & Stratton, 1956, pp. 35-43.
17. Savage, C. "The resolution and subsequent re-mobilization of resistance by LSD in psychotherapy." *J. Nerv. Ment. Dis.*, 125:434-437, 1957.
18. Slotkin, J. S. *The Peyote Religion*. Glencoe: Free Press, 1956.
19. Tausk, V. "On the origin of the influencing machine in schizophrenia." *Psychoanal. Quart.*, 2:519-556, 1933.
20. Tsa Toke, M. *The Peyote Ritual*. San Francisco: Grabhorn Press, 1957.

11. MESCALINE, LSD, PSILOCYBIN AND PERSONALITY CHANGE*

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. . . our normal waking consciousness . . . is but one special type of consciousness, whilst all about it, parted from it by the filmiest of screens, there lie potential forms of consciousness entirely different. . . . No account of the universe in its totality can be final which leaves these . . . disregarded. How to regard them is the question—for they are so discontinuous with ordinary consciousness.—William James. (1)

In recent years, how to regard the "forms of consciousness entirely different" induced by mescaline, LSD-25, and psilocybin has posed a seemingly perplexing issue. For articulate self-experimenters from Mitchell to Huxley, mescaline has provided many-slendered visual experiences, or a life-enlarging sojourn in "the Antipodes of the mind" (2). For Stocking, it may be recalled, mescaline produced controlled schizophrenia (3)—a thesis which earned the Bronze Medal of the Royal Medico-Psychological Association and apparently inaugurated, in conjunction with the advent of LSD-25, a period of concerted chemical activity in the exploration and experimental induction of "model psychoses" (4). In counterpoint, this same so-called "psychotomimetic" LSD has increasingly found use as a purposeful intervention or "adjuvant" in

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psychotherapy (5). The recently arrived "magic mushroom," psilocybin, has been similarly equivocal—"psychotogenic" for some, "mysticomimetic" for others (6). The present paper will review the literature on drug experience—paying particular attention to the effects of *extradrug* variables, for the realization of the extent of their potential influence has only recently crystallized, and promises to reduce some of the abundant disorder in this area.

The phenomenon of drug-associated rapid personality or behavior change will be discussed in some detail. For example, a number of different alcoholic treatment facilities, especially in Canada, have reported, for many of their patients, complete abstinence after a single LSD session (7). More generally, neurotic ailments over the full range have been described as practically evaporating (8). Given this picture, and the present state and practice of the therapeutic art, it is not surprising to find at least one psychiatrist envisioning ". . . mass therapy: institutions in which every patient with a neurosis could get LSD treatment and work out his problems largely by himself" (9). James would have been much attracted by the "spectacular and almost unbelievable results" (10) reported on the modern drug scene; and, in fact, their resemblance to the "instantaneous transformations" attendant on "mystical" religious conversions—which he discussed so eloquently—may well be more than superficial and seems worthy of attention.

The Equivalent Action of Mescaline, LSD-25, and Psilocybin

Since the evidence and testimony accumulated over the years on the separate drugs will be treated interchangeably, this raises a preliminary point of some importance. Although the conclusion was delayed by both dissimilarities in their chemical structure and differing modes of introduction to the scientific community, it is now rather commonly adjudged that the subjective effects of mescaline, LSD-25, and psilocybin are similar, equivalent, or indistinguishable. Both Isbell and Abramson have administered LSD and psilocybin in the same study; Wolbach and his co-workers have administered all three. All have found that their subjects were unable to distinguish between the drugs (11).

The reported equivalence in subjective reactions seems quite consistent—or at least not inconsistent—with present pharmacodynamic knowledge. Studies of radioactively tagged mescaline and LSD indicate that the compounds largely disappear from the brain in relatively short order—in fact, at about the same time that the first "mental phenomena" make their appearance (12). Hence, it has been tentatively suggested that the characteristic effects, which persist for a relatively long period, are to be attributed not to the action of the drug itself but to some as yet unidentified aspect of the chain of events triggered by drug administration. Isbell, observing the "remarkably similar" reactions to LSD and psilocybin, hypothesized "some common biochemical or physiological mechanism" to be responsible for the effects—that is, that the various compounds share a final common path (13). The most direct support for this inference of biological identity in ultimate mechanism of action has come from cross-tolerance studies wherein subjects rendered tolerant to one drug—that is, non-reactive after repeated administrations—have then been challenged by a different drug. Present indications are that cross-tolerance among the drugs does in fact develop (14).

This is not intended to suggest that a drug experience is invariable among subjects—quite the contrary has been the case. In fact, experiences even for the same subject differ from one session to the next (15). But when relevant extradrug variables are controlled, the within-drug variance is apparently coextensive with between-drug variance, and is attributable to ubiquitous personality differences; in other words, while a range of reactions is reported to *all* of the drugs, there is no reaction distinctively associated with any particular drug. Extradrug variables, which have been uncontrolled and largely unrecognized until recently, are apparently responsible for much of the variance erroneously attributed to specific drug action.

Invariant Drug Reactions

By common consent, the drug experience is paranormal—that is, beyond or outside the range of the normal, the everyday. Exclamations of "indescribable" recurrently appear in the literature. However, whenever descriptions are essayed, there is relative unanimity about certain features. These, it may be said, are attributable to the drug administration, *per se*, independent

of the personality of the subject, the setting, or the experimenter's or subject's expectations. A sampling from the literature of subjective reports and testimony may communicate, or at least transmit the flavor of, these invariant reactions.

First, and perhaps most easily conveyed, is the characteristic of the drug experience called by Ellis a "saturnalia" or "orgy" of vision (16). Subsequent authors have been only slightly more restrained:

The predominance of visual experiences in the picture is striking—not only on account of the persistent hallucinations and illusions, but by the impressiveness of seen real objects, their shape and color.... (17)

There is a great intensification of light; this intensification is experienced both when the eyes are closed and when they are open. . . . With this intensification of light there goes a tremendous intensification of color, and this holds good of the outer world as well as of the inner world (18).

When I closed my eyes . . . I experienced fantastic images of an extraordinary plasticity. These were associated with an intense kaleidoscopic play of colors (19).

Changes in the perception of visual form occur in virtually everyone. . . . Consistently reported [are] the plasticity which the forms of the visual world assume . . . the emphasis upon play of light and color, as though light were alive (20).

A second invariant set of drug reactions, more difficult to characterize or communicate, has been called, variously, depersonalization, dissociation, levitation, derealization, abnormal detachment, body image distortion or alteration, and the like:

There is an awareness of an abnormal distance between the self and what happens in its consciousness; on the other hand, the experience of an abnormal fusion of subject and object (21).

My ideas of space were strange beyond description. I could see myself from head to foot as well as the sofa on which I was lying. About me was nothingness, absolutely empty space. I was floating on a solitary island in the ether. No part of my body was subject to the laws of gravitation (22).

What happens in the LSD experience? . . . the universe is overtly structured in terms of an identification between the perceiver and the thing perceived. You hear the music way off down in a cavern,

and suddenly it is you who is way down in the cavern. Are you now the music, or is the music now at the mouth of the cavern? Did you change places with it? And so on? (23)

Some degree of depersonalization probably occurs during every LSD experience . . . the detachment of the conscious self, a sort of detached ego. This self is in touch with reality and is in touch with the self experiencing the psychic phenomena (24).

Regardless of whatever else a drug experience may be reported to include, alterations in visual experience and in experience of self, as detailed above, may be predicted with considerable confidence (25).

In connection with the so-called dissociation phenomenon—and in view of the connotations of the "psychotomimetic" and "intoxicant" labels—it may be well to emphasize that drug experiences, at least for most non-psychotic subjects, do not seem to approximate delirium:

The mescal drinker remains calm and collected amid the sensory turmoil around him; his judgment is as clear as in the normal state. . . . (26)

It is difficult to classify the state of consciousness during the intoxication which allows such self-observation and, at times, seems to foster detachment and self-scrutiny (27).

. . . in a state of clear consciousness [the subject] . . . is able to describe in detail the manifold mental changes during drug intoxication (28).

The non-delirious condition of normal volunteers, at least with low to moderate drug dosage, has been objectively attested by their ability to perform psychological tests. The most exhaustive series of investigations along this line has been carried out for LSD by Abramson and his associates (29). Generally, although not consistently, subjects show slight decrements in performance—at least some of which may well be attributable to an altered state of attention-motivation-affect. However, the test setting itself seems to contaminate the drug experience; Savage, among others, has noted "a less profound effect when subjects are kept busy doing psychological tests. . . ." (30)

Another and final set of seemingly invariant reactions concerns the retrospective impressiveness of the drug experience.

The succession of testimonials to this effect is a striking and salient feature of the history of research with these compounds:

In some individuals, the "ivresse divine" is rather an "ivresse diabolique." But in either case . . . one looks "beyond the horizon" of the normal world and this "beyond" is often so impressive or even shocking that its after-effects linger for years in one's memory (31).

The experience of the intoxication, as Beringer also observed, makes a particularly deep impression. . . . The personality is touched to its core and is led into provinces of psychic life otherwise unexplored; light is shed on boundaries otherwise dark and unrevealed and in this some aid may be given to *Existenzherhellung* (illumination of existence) (32).

. . . most subjects find the experience valuable, some find it frightening, and many say that it is uniquely lovely. . . . For itself, my experiences with these substances have been the most strange, most awesome, and among the most beautiful things in a varied and fortunate life (33).

To be shaken out of the ruts of ordinary perception . . . this is an experience of inestimable value to everyone and especially to the intellectual . . . the man who comes back through the Door in the Wall will never be quite the same as the man who went out (34).

. . . the whole experience is (and is as) a profound piece of knowledge. It is an indelible experience; it is forever known. I have known myself in a way I doubt would have ever occurred except as it did (35).

The "Psychotomimetic" Label

After the above renditions, a querulous reader may be concerned about the appellation "psychotomimetic drugs." So are many contemporary researchers and therapists, too numerous to mention. Holliday has provided a trenchant analysis of "how the semantics in the field of psychopharmacology became so confused and generally misleading" (36); here, only a few points will be noted.

Early mescaline investigators clearly tempered their comparisons between the mescal-induced state and the hallucinations and dissociations of endogenous psychosis. As far back as 1930, it was found that when chronic schizophrenics suffering from persistent hallucinations were given mescal, they distinguished the mescal phenomena, remarked on their appear-

ance, and usually blamed them on the same persecutors who had molested them before (37). Kluver, though he foresaw and extensively discussed the "model" values of mescal, persisted in calling it "the divine plant" (38). It was apparently difficult to consider a sacramental substance—"the comfort, healer, and guide of us poor Indians . . . the great teacher" (39)—as unequivocally psychotomimetic.

With LSD, a laboratory-born drug having no history to contend with, the situation changed. The adventurous Hofmann, on that fateful day in 1943, started his self-experiment with 250 micrograms of LSD, thinking, as he put it, that such a small amount would probably be harmless. His response to this quite large dose—in terms of present-day experimental standards—was as follows:

I noted with dismay that my environment was undergoing progressive change. Everything seemed strange and I had the greatest difficulty in expressing myself. My visual fields wavered and everything appeared deformed as in a faulty mirror. I was overcome by a fear that I was going crazy, the worst part of it being that I was clearly aware of my condition. The mind and power of observation were apparently unimpaired (40).

Hofmann went on to list, as his most marked symptoms, visual disturbances, motor restlessness alternating with paralysis, and a suffocating sensation, and added: "Occasionally I felt as if I were outside my body. My 'ego' seemed suspended in space. . . ." (41)

Stoll, who in 1947 reported experimental confirmation of Hofmann's experience, is widely reputed to have warned informally of a case of suicide as the aftermath of an experimental trial. The most common accounts thereafter had a psychotic female subject committing suicide two weeks after the administration; or, in another version, a subject committing suicide after the drug had been administered without her knowledge. At any rate, this story, though itself never appearing in print, is referred to in one form or another in nearly all of the early work with LSD; it apparently influenced experimenter attitudes for a number of years.

For many and varied reasons, too involved to trace here, the initial formulation of the "model psychosis" properties of LSD engendered enormous investigative enthusiasm. In this climate,

latent reservations on the score of psychotomimetics tended to go unvoiced. In the more recent, postenthusiasm era, however, reservations have been more or less vigorously expressed—for example:

There are considerable differences between LSD-induced and schizophrenic symptoms. The characteristic autism and dissociation of schizophrenia are absent with LSD. Perceptual disturbances due to LSD differ from those due to schizophrenia and, as a rule, are not true hallucinations. Finally, disturbances of consciousness following LSD do not resemble those occurring in schizophrenia (42).

Many alternatives to the "psychotomimetic" characterization of "hallucinogenic" agents have recently been proposed. In 1957, Osmond offered, among others, "psycholytic" (mind-releasing) and "psychedelic" (mind-manifesting) (43). Other investigators have proposed consciousness-expanding, transcendental, emotionalgenic, mysticomimetic, and so forth. It becomes ever more apparent, though, that old labels never die (44).

Variable Drug Reactions and Extradrug Variables

It may probably be stated as a pharmacopoeia commonplace that the effects of a drug administration of any kind are likely to be compounded by factors other than specific pharmacologic action. Often this is attributed to "personality," to individual differences (45). However, though there have been as yet very few controlled investigations in the case of the drugs considered here, it has become abundantly clear from the *systematic* variability reported in subject and patient reactions—in both the affective and ideational dimensions of drug experience—that factors other than "personality" are also at issue.

Affective reactions attendant on a drug administration have varied, according to reports, all the way from hyperphoric ecstasy to unutterable terror—though *not* with all investigators. The opinion leader Hoch, through a decade of observations, consistently maintained:

LSD and mescaline disorganize the psychic integration of the individual . . . (46)

. . . mescaline and LSD are essentially anxiety-producing drugs.
 . . . (47)

The following interchange was recorded at the 1959 conference on the use of LSD in psychotherapy held under the auspices of the Josiah Macy, Jr. Foundation:

Hoch: Actually, in my experience, no patient asks for it [LSD] again.

Katzenelbogen: I can say the same.

Denber: I have used mescaline in the office . . . and the experience was such that patients said, "Once is enough." The same thing happened in the hospital. I asked the patients there if, voluntarily, they would like to take this again. Over 200 times the answer has been "No" (48).

Subsequently, Malitz also stated:

None of our normal volunteers wanted to take it [LSD] again (49).

In contrast, DeShon and his co-workers reported the results of the first LSD study done with normal subjects in this country as follows:

. . . anxiety was infrequent, transient, and never marked. . . . All subjects were willing to repeat the test (50).

The experience of other investigators has been similar:

During the past four years we have administered the drug [LSD] hundreds of times to non-psychotics in doses up to 225 micrograms. . . . Those who have participated in these groups are nearly always definitely benefited by their experiences. Almost invariably they wish to return and to participate in new experiments (51).

. . . few patients discontinue treatment, in fact, enthusiasm and eagerness to continue are among the features of LSD patients (52).

The rapidly expanding use of LSD in psychotherapeutic contexts has provided highly revealing clues to the patterning of extradrug variability. Busch and Johnson were the first to report administering LSD to neurotic patients whose therapy had "stalled" and whose prognosis was "dim." The result was "a reliving of repressed traumatic episodes of childhood," with "profound" influence on the course of therapy (53). Sandison and his colleagues also found that LSD "produces an upsurge of unconscious material into consciousness" (54), and that "repressed memories are relived with remarkable clarity" (55)—with therapeutically beneficial consequences.

Since these early reports, whenever psychoanalytically oriented therapists have employed LSD, practically without exception the patient relives childhood memories. The interesting point is that this phenomenon has practically *never* been noted in the experimental literature!

Jungian therapists, on the other hand, have repeatedly found that their patients have "transcendental" experiences—a state beyond conflict—often with rapid and dramatic therapeutic results. As a matter of fact, in an amusing and somewhat bemused account, Hartman has described his LSD-using group comprised of two Freudians and two Jungians, in which the patients of the former report childhood memories, while those of the latter have "transcendental" experiences. In addition, for Jungian patients, the transcendental state is associated with "spectacular" therapeutic results, while for Freudians, should such a state "accidentally" occur, no such spectacular consequence is observed (56).

While not from a therapeutic setting, the reports which have emanated from Harvard are noteworthy on the score of ideational content. Under psilocybin, Harvard subjects do not relive their childhood experiences, but grapple with age-old paradoxes:

. . . the problem of the one and the many, unity and variety, determinism and freedom; mechanism and vitalism; good and evil; time and eternity; the plenum and the void; moral absolutism and moral relativism; monotheism and the polytheism and atheism. These are the basic problems of human existence. . . . We need not wonder that the Indians called the mushroom sacred and gave it a name which means "the flesh of the god" (57).

Without multiplying or belaboring divergences further, it should be apparent that affective reactions and ideational content may be *systematically* variable dimensions of drug experience; in addition, the possible therapeutic uses or consequences, however these are conceived, seem clearly variable. Once these "facts" are arrayed, in Baconian fashion, they nearly speak for themselves. At the Josiah Macy conference, the emerging consensus was perhaps best expressed by Savage:

This meeting is most valuable because it allows us to see all at once results ranging from the nihilistic conclusions of some to the evangelical ones of others. Because the results are so much influenced by the personality, aims, and expectations of the therapist,

and by the setting, only such a meeting as this could provide us with such a variety of personalities and settings. It seems clear, first of all, that where there is no therapeutic intent, there is no therapeutic result. . . . I think we can also say that where the atmosphere is fear-ridden and skeptical, the results are generally not good. . . . This is all of tremendous significance, for few drugs are so dependent on the milieu and require such careful attention to it as LSD does (58).

The same conclusion has come from experimental quarters as well—for example:

[The effect] of hallucinogens is not limited to any single agent since, in addition to psilocybin, we have seen it with LSD-25 and mescaline. The environmental setting in which the drug is administered . . . affects the emerging behavior pattern. This factor may account for variations in results with different investigators. Our hospital setting, with the subject, a paid volunteer, receiving an unknown agent, in an experimental framework surrounded by unfamiliar doctors and nurses, differs markedly from the mystical setting which Wasson observed. . . . Only one of our subjects reported what might be described as a transcendental experience. . . . The differences in expectation and setting between these two grossly divergent groups may account in part for the disparity in their responses (59).

More specifically, anxiety in the therapist or experimenter about administering the drug, about "inducing psychosis," seems likely to render the experience anxiety-ridden for the subject. Abramson has flatly declared: "The response of the subject . . . will depend markedly upon the attitude of the therapist. . . . In particular, if the therapist is not anxious about the use of the drug, anxiety in the patient will be much decreased" (60). Hyde has reported that "impersonal, hostile, and investigative attitudes" arouse hostile and paranoid responses (61). Sandison has observed that the occurrence of anxiety seems largely to depend on "what the patient is told beforehand [as well as] rumors and myths current among patients and staff, or even in the press, about hallucinogenic drugs" (62). Huxley had intimated this before it became clarified in the psychiatric literature:

. . . the reasonably healthy person knows in advance that, so far as he is concerned, mescaline is completely innocuous. . . . Fortified by

this knowledge, he embarks upon the experience without fear—in other words, without any disposition to convert an unprecedented strange and other than human experience into something appalling, something actually diabolical (63).

That the positive or negative character of the experience can be systematically directed, overriding even personality factors, seems now to have been fairly conclusively demonstrated. With "adequate" preparation—that is, with the specific intent of rendering drug experiences "positive"—approximately 90 percent of the subjects or patients, in each of the two most recent studies, reported at least a "pleasant" or "rewarding" session, and nearly as many called it "an experience of great beauty" or something equally superlative (64).

In content, as in affect, subjects apparently respond to the implicit or explicit suggestion of expectation of the therapist or experimenter. The Harvard subjects were prepared for their metaphysical binges, it may be noted, with such assigned readings as the "Idols of the Cave" parable in Plato's *Republic* and passages from *The Tibetan Book of the Dead*. The preparation of psychotherapy patients hardly needs specification.

Finally, what may be said about therapeutic implications?—given the fact that the compounds under discussion may induce a powerful paranormal experience whose affective and ideational content can be guided. Only perhaps that the extent to which the experience can serve as a useful adjunct to traditional interview therapies, or vice versa, or even as a "complete therapy" would seem to depend on the particular practitioner of the art—his conceptions of therapeutic gains and consequences, his philosophy and enthusiasm, and his orientation toward "placebo" or "faith" cures (65). Schmiege has summarized the current state of affairs as follows:

Those using LSD in multiple doses as an adjunct to psychotherapy feel that it is so useful because of its ability to do the following: (1) It helps the patient to remember and abreact both recent and childhood traumatic experiences. (2) It increases the transference reaction while enabling the patient to discuss it more easily. (3) It activates the patient's unconscious so as to bring forth fantasies and emotional phenomena which may be handled by the therapist as dreams. (4) It intensifies the patient's affectivity so that excessive intellectualization is less likely to occur. (5) It allows the patient to better see his customary defenses and some-

times allows him to alter them. Because of these effects, therapists feel that psychotherapy progresses at a faster rate. Of course this poses the age old problem of what is the essence of psychotherapy.

There are many reports of patients receiving meaningful insight about themselves in an LSD experience without the intervention, participation or even presence of a therapist. . . . Those who administer lysergic acid in a single dose have as their goal, in the words of Sherwood, *et al.*, an overwhelming reaction "in which an individual comes to experience himself in a totally new way and finds that the age old question Who am I? does have a significant answer." Frequently, this is accompanied by a transcendental feeling of being united with the world. . . . Some spectacular, and almost unbelievable, results have been achieved by using one dose of the drug (66).

Rapid Personality Change

An increasing number of subjects, patients, experimenters, and psychiatrists—spontaneously or with priming—have declared their drug experiences to be transcendental, mystical, cosmic, visionary, revelatory, and the like. There seems to be difficulty in finding the right name for the experience, even among the professional so-called "mystics":

There is no really satisfactory name for this type of experience. To call it mystical is to confuse it with visions of another world, or of god and angels. To call it spiritual or metaphysical is to suggest that it is not also extremely concrete and physical, while the term "cosmic consciousness" itself has the unpoetic flavor of occultist jargon. But from all historical times and cultures we have reports of this same unmistakable sensation emerging, as a rule, quite suddenly and unexpectedly and from no clearly understood cause (67).

Whatever this type of experience is called, however, a growing body of "expert" testimony apparently confirms the possibility of its induction by drugs. Watts, the dean of current Western Zen scholars, has recently described "cosmic consciousness," courtesy of LSD, in exquisite detail (68). Seminary students and professors in the Boston area are said to have definitely concluded that their contact with psilocybin was "mystico-religious" (as to whether or not it was "Christian," however, they are still in doubt) (69). Huxley has been most

outspoken about the capacity of the drugs to induce "traditional" mystical-visionary states:

For an aspiring mystic to revert, in the present state of knowledge, to prolonged fasting and violent self-flagellation would be as senseless as it would be for an aspiring cook to behave like Charles Lamb's Chinaman, who burned down the house in order to roast a pig. Knowing as he does (or at least as he can know, if he so desires) what are the chemical conditions of transcendental experience, the aspiring mystic should turn for technical help to the specialists. . . . (70)

Nearly invariably, whenever dramatic personality change has been noted following the use of these drugs, it has been associated with this kind of experience—that is, one called transcendental or visionary—with the particular name the experience is given seemingly most dependent upon whether the investigator focuses on affect or content. These experiments in drug-induced behavior change will shortly be reviewed in detail.

Examples Not Associated with Drugs

Since accounts of behavior transformations attendant on paranormal experience are not without precedent, it may be helpful to set the stage for present developments by citing some examples not connected with drugs. James reported on the phenomenon in its most familiar and perhaps prototypic context:

In this lecture we have to finish the subject of conversion, considering it first through striking instantaneous instances of which St. Paul's is the most eminent, and in which, often amid tremendous emotional excitement or perturbation of the senses, a complete division is established in the twinkling of an eye between the old life and the new.

After adducing numerous examples, James continued:

I might multiply cases almost indefinitely, but these will suffice to show you how real, definite, and memorable an event a sudden conversion may be to him who has the experience. Throughout the height of it he undoubtedly seems to himself a passive spectator or undergoer of an astounding process performed upon him from above. There is too much evidence of this for any doubt of it to be possible. Theology, combining this fact with the doctrine of elec-

tion and grace, has concluded that the spirit of God is with us at these dramatic moments in a peculiarly miraculous way, unlike what happens at any other juncture of our lives. At that moment, it believes, an absolutely new nature is breathed into us, and we become partakers of the very substance of the Deity (71).

One may also recall to mind the "vision-seeking" American Indians whom Ruth Benedict immortalized. Adapting Nietzsche's designation "Dionysian" to characterize their cultural pattern, she portrayed its fundamental contrast with the "Apolлонian" Zuñi-Pueblo way of life. The Dionysian "seeks to attain in his most valued moments escape from the boundaries imposed on him by his five senses, to break through into another order of experience." He values "all means by which human beings may break through the usual sensory routine" (72).

Widespread among the western Indians (except in the Pueblos) was what Benedict called the "Dionysian dogma and practice" of the vision-quest—sought by fasting, by torture, and by drugs. The point of interest, of course, is that when the vision came, it could apparently trigger large-scale behavior alterations which had the stamp and reinforcement of social approval.

. . . on the western plains men sought these visions with hideous tortures. They cut strips from the skin of their arms; they struck off fingers; they swung themselves from tall poles by straps inserted under the muscles of their shoulders. They went without food and water for extreme periods. They sought in every way to achieve an order of experience set apart from daily living.

On the western plains they believed that when the vision came, it determined their life and the success they might expect. If no vision came, they were doomed to failure. . . . If the experience was of curing, one had curing powers; if of warfare, one had warrior's powers. If one encountered Double Woman, one was a transvestite, and took woman's occupations and habits. If one was blessed by the mythical Water-Serpent, one had supernatural power for evil, and sacrificed the lives of one's wife and children in payment for becoming a sorcerer (73).

The final example which will be noted here of rapid personality change not induced by drugs has emerged quite recently from Maslow's studies of "self-actualization." Maslow

reports that the occurrence of a dramatic "peak experience"—defined or alternatively described as a "cognition of being," or as "mystic" or "oceanic"—is a major event in the life histories of his "self-actualizing" subjects. Maslow avers "unanimous agreement" among his subjects as to the "therapeutic" after-effects of such peak experiences—for example, that they were so profound as to remove neurotic symptoms forever; or were followed by greater creativity, spontaneity, or expressiveness; or produced a more or less permanently changed, more healthy world-view or view of self, and so on (74).

Drug-Associated Personality Change: A "New Concept" in Psychotherapy

It is an intriguing historical accident that, on the one hand, anthropological studies of the Native American Church (Peyotism) consistently record the peyote-associated reformation of alcoholic and generally reprobate characters (75), and, on the other hand, LSD has been increasingly utilized in the treatment of the white man's "fire-water" ills. LSD was first systematically administered to non-Indian alcoholics in order to explore a putative similarity between the so-called model psychosis and delirium tremens. Two independent undertakings along this line, one in the U.S. and one in Canada, resulted in highly unexpected and sudden "cures" (76).

Investigators in Saskatchewan pursued this serendipitous result aggressively. The outcome, with lately-evolved refinements in technique, has been an explicitly formulated "new concept" in psychotherapy (77). The following narrative, pieced together from Hoffer's statements at the Macy LSD conference, describes the conditions under which the rapid change phenomenon seems first to have occurred in sizeable numbers:

. . . we have what we call the "businessman's special," for very busy people, the weekend treatment. . . . They come in because the police or Alcoholics Anonymous or others bring them in. They come in on day *one*. They know they are going to take a treatment, but they know nothing about what it is. We take a psychiatric history to establish a diagnosis. That is on day *one*. On day *two*, they have the LSD. On day *three*, they are discharged.

Our objective [in using 200-400 gamma doses] is to give each patient a particular LSD experience.

The results are that 50 per cent of these people are changed [that is, they stop drinking or are much improved]. . . . As a general rule . . . those who have not had the transcendental experience are not changed; they continue to drink. However, the large proportion of those who have had it are changed (78).

The only other investigators to report a "weekend treatment" are Ball and Armstrong (79). They describe a small series of "sex perverts," at least two of whom had had, over a number of years, "a variety of forms of psychotherapy, including psychoanalysis . . . [resulting in] no improvement whatever." The large-dose LSD experience, however, is said to have had "remarkable, long-lasting remedial effects" (80).

MacLean and his co-workers in British Columbia, Canada, have reported on a series which included 61 alcoholics and 33 neurotics (personality trait disturbance and anxiety reaction neurosis) (81). Each patient was carefully and intensively prepared for the 400-1500 gamma, "psychedelic LSD-day"—which was jointly conducted by a psychiatrist, a psychologist, a psychiatric nurse, and a music therapist. Their follow-up data (median follow-up was for 9 months) were interpreted to yield a "much improved" or "improved" rating for over 90 percent of the neurotics and 60 percent of the alcoholics, with just under 50 percent of the alcoholics found at follow-up to have remained "totally dry" (82). The results of this single LSD session with the alcoholic cases seem most impressive, in view of the picture provided:

These were considered to be difficult cases; 59 had experienced typical delirium tremens; 36 had tried Alcoholics Anonymous and were considered to have failed in that program. The average period of uncontrolled drinking was 14.36 years. The average number of admissions to hospital for alcoholism during the preceding 3 years was 8.07 (83).

Since Hoffer's account, procedures in Saskatchewan have apparently been modified to incorporate considerable "psychotherapy"—as an adjunct to, and preparation for, the LSD experience. In a recent report, Jensen has described a greatly expanded treatment method and its results:

The treatment program includes three weekly A.A. meetings. The patients are strongly encouraged, but not forced, to attend. There are also 2 hours of group psychotherapy, in the course of

which those who are not already familiar with the A.A. program are indoctrinated mainly by the other patients' discussion. . . . Because of the fairly short time available, the group therapy is superficial in nature and primarily educational.

Toward the end of hospitalization (which averaged 2 months), the patients were given an LSD experience. They routinely received 200 gamma of the drug. . . . (84)

Of 58 patients who experienced the full program, including LSD, and were followed up for 6 to 18 months, 34 had remained totally abstinent since discharge or had been abstinent following a short experimental bout immediately after discharge; 7 were considered improved, i.e., were drinking definitely less than before; 13 were unimproved; and 4 broke contact.

Of 35 patients who received group therapy without LSD, 4 were abstinent, 4 were improved, 9 were unimproved and 18 were lost to follow-up.

Of 45 controls, consisting of patients admitted to the hospital during the same period who received individual treatment by other psychiatrists, 7 were abstinent, 3 improved, 12 unimproved, and 23 lost to follow-up (85),

Among the reservations that might be expressed about Jensen's study, two are outstanding. First, there is some ambiguity about the assignment of patients to the different treatment conditions—it does not seem to have been entirely random. Second, Jensen's assumption that patients who broke or refused follow-up contact with the hospital staff are safely categorized, for statistical purposes, as "treatment failures" would seem somewhat overweening. At any rate, on his count, the difference in percentages of patients "abstinent or improved" between the "full program-LSD" group (41 out of 58, or 71 percent) and the "individual psychotherapy" group (10 out of 45, or 22 percent) was highly statistically significant.

The present "official policy" of the Saskatchewan Department of Public Health may be of interest. A recently issued document, which reviews the results of four such follow-up studies as Jensen's, concludes with the directive that the single, large-dose LSD treatment of alcoholism is to be considered "no longer as experimental," but rather, "to be used where indicated" (86).

There seem to have been only two efforts in the U.S. to explicitly and systematically follow the Canadian model. In quite different contexts, both are reported as at least "doing well." Leary and his co-workers at Harvard, over the last two years,

have conducted a research and treatment program at Massachusetts Correctional Institution, Concord, "designed to test the effects of consciousness-expanding drugs on prisoner rehabilitation" (87). This undertaking, which emphasizes the crucial importance of drug-induced "far-reaching insight experiences"—prepared for, supported, and reinforced by group therapy sessions—has resulted in a recidivism rate considerably reduced from actuarial expectation. The number of post-treatment cases on which this evaluation is based, however, is only 26. The program is ongoing (88).

In a much more familiar setting, a group of workers on the West Coast has been treating the full range of garden-variety neuroses. The patients are intensively prepared over a two- to three-week period for a large-dosage, "transcendental" drug session. The stated intent is to induce a "single overwhelming experience . . . so profound and impressive that . . . the months and years that follow become a continuing growth process" (89). Thus far, in over 100 treated cases, at least "marked improvement" in the condition for which treatment was sought has been reported in about 80 percent—after one so-called overwhelming experience (90).

It is a commonplace that new psychiatric treatments seem to effect remarkable cures—at least for a short time and in the hands of their originators. In raising the spectre of the powerful placebo effect (91), it need hardly be pointed out that the results reviewed above should be regarded with healthy skepticism. On the other hand, they are more than merely trifling.

Explanatory Concepts

In addressing a recent international assemblage at Copenhagen, Leary asserted:

The visionary experience is the key to behavior change. [In its wake] change in behavior can occur with dramatic spontaneity . . . (92).

Van Dusen, who bids fair to become the psychologist-philosopher of the "new concept" movement, puts the issue as follows:

There is a central human experience which alters all other experiences . . . not just an experience among others, but . . . rather the very heart of human experience. It is the center that gives under-

standing to the whole. . . . It has been called satori in Japanese Zen, moksha in Hinduism, religious enlightenment or cosmic consciousness in the West. . . . Once found life is altered because the very root of human identity has been deepened . . . the still experimental drug d-lysergic acid diethylamide (LSD) appears to facilitate the discovery of this apparently ancient and universal experience (93).

Although reminded on all sides of the incommunicableness of "the transport," as James called it, of its ineffability, one may, before following him in the descent toward "medico-materialistic" explanation, inquire further of its nature. James proffered the traditional demurrer ". . . it is probably difficult to realize [its] intensity unless one has been through the experience one's self . . ." (94). He then proceeded, with seeming aplomb, to describe it:

The central [characteristic] is the loss of all worry, the sense that all is ultimately well with one, the peace, the harmony, the *willingness to be* . . .

The second feature is the sense of perceiving truths not known before . . . insight into depths of truth unplumbed by the discursive intellect. . . . The mysteries of life become lucid . . . illuminations, revelations, full of significance and importance, all inarticulate though they remain. . . .

A third peculiarity . . . is the objective change which the world often appears to undergo. "An appearance of newness beautifies every object" . . . clean and beautiful newness within and without . . . (95).

In James' view, "melting emotions and tumultuous affections" were the constant handmaiden of "crises of change" (96). Also Benedict, in the context of the vision-quest, remarked on ". . . very strong affect, either ultimate despair or release from all inadequacy and insecurity" (97). Chwelos and his co-workers, describing the transcendental drug experience as "mainly in the sphere of emotions or feeling" (98), exemplify this by quoting an alcoholic patient:

I was swept by every conceivable variety of pleasant emotion from my own feeling of well-being through feelings of sublimity and grandeur to a sensation of ecstasy (99).

Finally now, turning from the poetry of phenomenal experi-

ence to medico-materialism, how did James approach the matter of explanation?

If you open the chapter on Association, of any treatise on psychology, you will find that a man's ideas, aims, and objects form diverse internal groups and systems, relatively independent of one another. . . . When one group is present and engrosses the interest, all the ideas connected with other groups may be excluded from the mental field. . . . Our ordinary alterations of character as we pass from one of our aims to another, are not commonly called transformations . . . but whenever one aim grows so stable as to expel definitively its previous rivals from the individual's life we tend to speak of the phenomenon and perhaps to wonder at it, as a "transformation."

Whether such language be rigorously exact is for the present of no importance. It is exact enough, to recognize from your own experience the fact which I seek to designate by it.

Now if you ask of psychology just *how* the excitement shifts in a man's mental system, and *why* aims that were peripheral become at a certain moment central, psychology has to reply that although she can give a general description of what happens, she is unable in a given case to account accurately for all the single forces at work.

In the end we fall back on the hackneyed symbolism of mechanical equilibrium. A mind is a system of ideas, each with the excitement it arouses, and with tendencies impulsive and inhibitive, which mutually check or reinforce one another. . . . A new perception, a sudden emotional shock . . . will make the whole fabric fall together, and then the center of gravity sinks into an attitude more stable, for the new ideas that reach the center in the rearrangement seem now to be locked there, and the new structure remains permanent (100).

More modern discussions of rapid personality change seem, in large part, to be variations on the theme of "melting emotions and tumultuous affections." There have been two relatively recent efforts to deal with rapid change associated primarily with conversion. Wallace, who attempted an heroic amalgam of Selye's "stress" theory and cultural anthropology, summed this up as follows:

. . . the physiologic events of the general adaptation syndrome [in situations of massive emotion] establish a physicochemical milieu in which certain brains can perform a function of which they are normally incapable: a wholesale re-synthesis that transforms intel-

lectual insight into appropriate motivation, reduces conflict by partial or total abandonment of certain values and acceptance of others, and displaces old values to new, more suitable objects (101).

Sargent has linked along an axis of abnormal "anger, fear, or exaltation" such "abrupt total reorientations" in personality as attend religious and political conversion experiences—as well as violent abreactions in therapy, spontaneous or narcosynthetic. His explanatory scheme derives directly from Pavlov—in the final analysis, sudden alterations in behavior are attributed to "paradoxical" and ultraparadoxical" brain processes, and the like, induced by extreme emotion (102).

To return to LSD-related developments, Ditman and his co-workers have reviewed a whole range of considerations and theories which might "rationalize" the sudden change phenomenon—including a highly libidinized psychoanalytic formulation (103).

It remains to raise just one final query. Rapid personality change, translated into language more congenial to behavioral psychology, could be taken to describe a situation in which formerly dominant or high-probability responses, overt or mediational, were suddenly greatly reduced in frequency of occurrence; and, vice versa, uncommon responses, or those formerly *low* in a hierarchy, appear with greatly elevated frequency. The only experimental results which even approximate this order of events seem to be those which have arisen with the aid of direct intracranial electrical stimulation. With response-contingent reinforcement of this kind—that is, with electrical "trains" delivered to the hypothalamic, so-called pleasure or reward centers—the repertoires of many rats and monkeys have been dramatically altered in a very few moments: Utterly new behaviors have been shaped, old responses eliminated (104). The degree to which such "artificially induced" learning has been sustained has been a function, as with all behavior, of the ebb and flow of environmental contingencies. Thus, to point the issue: Do transcendental experiences at the human level, however they are interpreted, tread in this area of *superreinforcement*—with a potential for radically altering the probability of occurrence of "heuristic" mediating processes (for example, positive rather than negative self-con-

cepts) which might channel behavior, at least temporarily, in new directions, toward a "new beginning"?

With Ruth Benedict's "Apollonian" Zuni, the tendency of the modern West is to regard paranormal experiences, indiscriminately and often with little idea of their nature, as "pathological"—to be distrusted, feared, avoided. The Zuni Indian, said Benedict, "finds means to outlaw them from his conscious life. . . . He keeps the middle of the road, stays within the known map, does not meddle with disruptive psychological states" (105). It would seem unfortunate were this *Zeitgeist* to unduly prejudice the exploration of therapeutic potential in the drugs here discussed.

In conclusion, let it be noted that the public health implications of drug-associated rapid personality change, should this phenomenon prove *not* to be a will-of-the-wisp, are apparently great. Intensive investigation would seem a reasonable order of the day. The procedures and time involved are manifestly economical—in truth, there seems little to be lost.

REFERENCES

1. *The Varieties of Religious Experience*, New York: Modern Library, 1902; pp. 378-379.
2. S. Weir Mitchell, "The Effects of Anhalonium Lewinii (the Mescal Button)," *Brit. Med. J.* (1896) 2:1625-1629. Aldous Huxley, "Mescaline and the Other World," pp. 46-50, in *Proceedings of the Round Table on Lysergic Acid Diethylamide and Mescaline in Experimental Psychiatry*, edited by Louis Cholden. New York: Grune & Stratton, 1956; see p. 47
3. G. Tayleur Stockings, "Clinical Study of the Mescaline Psychosis with Special Reference to the Mechanisms of the Genesis of Schizophrenia and Other Psychotic States," *J. Mental Science* (1940) 86:29-47.
4. For example, see Max Rinkel, Editor, *Chemical Concepts of Psychosis*. New York: McDowell, Obolensky, 1958.
5. For example, see Harold A. Abramson, Editor, *The Use of LSD in Psychotherapy: Transactions of a Conference*. New York: Josiah Macy, Jr., Foundation Publications, 1960.
6. Max Rinkel, C. W. Atwell, Alberto DiMascio, and J. R. Brown, "Experimental Psychiatry. V: Psilocybin, a New Psychotogenic Drug," *New England J. Med.* (1960) 262: 293-299. Stephen Szara, "Psychotomimetic or Mysticomimetic?," paper presented at NIMH, Bethesda, Md., Nov. 14, 1961.
7. For examples, see: Nicholas Chwelos, Duncan Blewett, Colin Smith, and Abram Hoffer, "Use of LSD-25 in the Treatment of Alcoholism," *Quart. J. Studies on Alcohol* (1959) 20:577-590.

J. Ross MacLean, D. C. MacDonald, Ultan P. Byrne, and A. M. Hubbard, "The Use of LSD-25 in the Treatment of Alcoholism and Other Psychiatric Problems," *Quart. J. Studies on Alcohol* (1961) 22:34-45. P. O. O'Reilly and Genevieve Reich, "LSD, Transcendence, and the New Beginning," *J. Nervous and Mental Disease* (1962) 135: 425-439. John N. Sherwood, Myron J. Stolaroff, and Willis W. Harman, "The Psychedelic Experience — A New Concept in Psychotherapy," *J. Neuropsychiatry* (1962) 3:370-375.

9. C. H. Van Rhijn, "Introductory Remarks: Participants," in footnote 5; p. 14.

10. Gustav R. Schmiege, "The Current Status of LSD as a Therapeutic Tool—A Summary of the Clinical Literature," paper presented to the Amer. Psychiatric Assn., Toronto, Canada, May 8, 1962 (in press, *New Jersey Med. Soc. J.*, 1963).

11. Harris Isbell, "Comparison of the Reactions Induced by Psilocybin and LSD-25 in Man," *Psychopharmacologia* (1959) 1:29-38. Harold A. Abramson, "Lysergic Acid Diethylamide (LSD-25): XXX, The Questionnaire Technique with Notes on Its Use," *J. Psychology* (1960) 49:57-65. A. B. Wolbach, E. J. Miner, and Harris Isbell, "Comparison of Psilocin with Psilocybin, Mescaline and LSD-25," *Psychopharmacologia* (1962) 3:219-223.

12. For examples, see: Max Rinkel, "Pharmacodynamics of LSD and Mescaline," *J. Nervous and Mental Disease* (1957) 125:424-426. T. J. Haley and J. Rutschmann, "Brain Concentrations of LSD-25 (Delysid) after Intracerebral or Intravenous Administration in Conscious Animals," *Experientia* (1957) 13:199-200.

13. See Isbell, in footnote 11; p. 37.

14. For examples, see: Antonio Balestrieri and Diego Fontanari, "Acquired and Crossed Tolerance to Mescaline, LSD-25, and BOL-148," *Arch. General Psychiatry* (1959) 1:279-282. Harris Isbell, A. B. Wolbach, Abraham Wikler, and E. J. Miner, "Cross-Tolerance Between LSD and Psilocybin," *Psychopharmacologia* (1961) 2:147-151.

15. T. W. Richards and Ian P. Stephenson, "Consistency in the Psychologic Reaction to Mescaline," *Southern Med. J.* (1961) 54:1319-1320.

16. Havelock Ellis, "Mescal, a New Artificial Paradise," pp. 537-548, in *Annual Report, Smithsonian Institution*, 1897; p. 547.

17. W. Mayer-Gross, "Experimental Psychoses and Other Mental Abnormalities Produced by Drugs," *Brit. Med. J.* (1951) 57:317-321; p. 318.

18. See Huxley, in footnote 2; pp. 47-48.

19. From Albert Hofmann's laboratory report, translated and quoted in H. Jackson DeShon, Max Rinkel, and Harry C. Solomon, "Mental Changes Experimentally Produced by LSD," *Psychiatric Quart.* (1952) 26:33-53; p. 34.

20. Frank Barron, "Unusual Realization and the Resolution of Paradox When Certain Structural Aspects of Consciousness Are Altered," paper read at the Amer. Psychological Assn., New York, September, 1961.

21. E. Guttman and W. S. MacLay, "Mescaline and Depersonalization: Therapeutic Experiments," *J. Neurol. Psychopath.* (1936) 16:193-212; p. 194.

22. Translated from a subject's account in K. Beringer, *Der Mescalinrausch*; Berlin, Springer, 1927; and quoted in Robert S. DeRopp, *Drugs and the Mind*. New York: Grove, 1957; p. 51.

23. Gregory Bateson, "Group Interchange," in footnote 5; p. 188.

24. Ronald A. Sandison, A. M. Spencer, and J. D. A. Whitelaw, "The Therapeutic Value of Lysergic Acid Diethylamide in Mental Illness," *J. Mental Science* (1954) 100: 491-507; p. 498.

25. Electrophysiological investigations have shown definite alterations in firing at a number of points in the visual system (also in auditory evoked potentials) and in the functioning of cortico-cortical transcallosal connections. However, in concluding an extensive review of electrophysiological results, Evarts warned: ". . . it does not appear that we have reached the point of being able to assign any particular psychological effect . . . to a demonstrated disturbance of the electrical activity of the nervous system." See Edward V. Evarts, "A Review of the Neurophysiological Effects of LSD and Other Psychotomimetic Agents," *Annals N. Y. Acad. Science* (1957) 66:479-495; p. 489. Speculation on this issue may best be tempered by consulting Evarts' most thoughtful summation and evaluation.

26. See footnote 16; p. 547.

27. See footnote 17; p. 319.

28. Paul H. Hoch, "Experimental Psychiatry," *Amer. J. Psychiatry* (1955) 111:787-790; p. 787.

29. For example, see A. Levine, Harold A. Abramson, M. R. Kaufman, and S. Markham, "Lysergic Acid Diethylamide (LSD-25): XVI. The Effect of Intellectual Functioning as Measured by the Wechsler-Bellevue Intelligence Scale," *J. Psychology* (1955) 40:385-395.

30. Charles Savage, "The Resolution and Subsequent Remobilization of Resistance by LSD in Psychotherapy," *J. Nervous and Mental Disease* (1957) 125:434-436; p. 436.

31. Heinrich Kluver, *Mescal: The Divine Plant and Its Psychological Effects*. London: Kegan Paul, 1928; pp. 105-106.

32. See footnote 21; p. 195.

33. Humphry Osmond, "A Review of the Clinical Effects of Psychotomimetic Agents," *Annals N. Y. Acad. Science* (1957) 66:418-434; p. 419.

34. Aldous Huxley, *The Doors of Perception*. New York: Harper, 1954; pp. 73, 79.

35. Philip B. Smith, "A Sunday with Mescaline," *Bull. Menninger Clinic* (1959) 23:20-27. p. 27.

36. Audrey R. Holliday, "The Hallucinogens: A Consideration of Semantics and Methodology with Particular Reference to Psychological Studies," pp. 301-318, in *A Pharmacologic Approach to the Study of the Mind*, edited by R. Featherstone and A. Simon. Springfield, Ill.: Thomas, 1959; p. 301.

37. See footnote 17, p. 320, for a review of the findings of K. Zucker, *Z. ges. Neurol. Psychiat.* (1930) 127:108.

38. See footnote 31.

39. James S. Slotkin, *Peyote Religion*. Glencoe, Ill.; Free Press, 1956; pp. 76-77.

40. Translated from Albert Hofmann's laboratory report, and quoted in "Discovery of D-Lysergic Acid Diethylamide-LSD," *Sandoz Excerpta* (1955) 1:1-2; p. 1.

41. See footnote 40; p. 2. For the record, it may be noted not only that Hofmann recovered, and subsequently synthesized psilocybin, but that he has recently written of the use of "psychotomimetics" in psychotherapy: ". . . these substances are

new drug aids which . . . enable the patient to attain self-awareness and gain insight into his disease." See Albert Hofmann, "Chemical, Pharmacological and Medical Aspects of Psychotomimetics," *J. Exper. Med. Science* (1961) **5**:31-51; p. 48.

42. Translated from B. Manzini and A. Saraval, "L'intossicazione Sperimentale da LSD ed i Suoi Rapporti con la Schizofrenia, *Riv. Sper. Frentiat.* (1960) 84:589; and quoted in *Delysid (LSD-25), Annotated Bibliography, Addendum No. 3*, mimeographed, Sandoz Pharmaceuticals, 1961; p. 307.

43. See footnote 33; p. 429.

44. In taking issue with the "psychotomimetic" label, it had best be emphasized that the present intent is hardly to transmit a cavalier attitude toward drug administrations; these are obviously potent agents. On the other hand, they are also apparently "safe" when used with reasonable precaution. For a survey of the outcome of 25,000 administrations, see Sidney Cohen, "LSD: Side Effects and Complications," *J. Nervous and Mental Disease* (1960) **130**:30-40.

45. For example, see Joseph Zubin and Martin M. Katz, "Psychopharmacology and Personality," presented at the Colloquium on Personality Change, Univ. of Texas, Austin, Texas, March 9, 1962 (in press).

46. See footnote 28; p. 788.

47. Paul H. Hoch, "Remarks on LSD and Mescaline," *J. Nervous and Mental Disease* (1957) **125**:442-444; p. 442.

48. Paul H. Hoch, Solomon Katzenelbogen, and Herman C. B. Denber, "Group Interchange," in footnote 5; p. 58.

49. Sidney Malitz, "Group Interchange," in footnote 5; p. 215.

50. See footnote 19; p. 50.

51. Harold A. Abramson, "Some Observations on Normal Volunteers and Patients," pp. 51-54, in *Proceedings of the Round Table on Lysergic Acid Diethylamide and Mescaline in Experimental Psychiatry*, in footnote 2; see pp. 52-53.

52. Ronald A. Sandison, "The Clinical Uses of LSD," pp. 27-34, in *Proceedings of the Round Table on Lysergic Acid Diethylamide and Mescaline in Experimental Psychiatry*, in footnote 2; see p. 33.

53. Anthony K. Busch and Walter C. Johnson, "LSD-25 as an Aid in Psychotherapy (Preliminary Report of a New Drug)," *Diseases Nervous System* (1950) **11**:241-243; pp. 242-243.

54. Ronald A. Sandison, "Psychological Aspects of the LSD Treatment of the Neuroses," *J. Mental Science* (1954), **100**:508-515; p. 514.

55. See footnote 24; p. 507.

56. Mortimer A. Hartman, "Group Interchange," in footnote 5; p. 115.

57. See footnote 20.

58. See Charles Savage, "Group Interchange," in footnote 5; pp. 193-194.

59. Sidney Malitz, Harold Esecover, Bernard Wilkens, and Paul H. Hoch, "Some Observations on Psilocybin, a New Hallucinogen, in Volunteer Subjects," *Comprehensive Psychiatry* (1960) **1**:8-17; p. 15.

60. See footnote 51; p. 52.

61. Robert W. Hyde, "Psychological and Social Determinants of Drug Action," pp. 297-312, in *The Dynamics of Psychiatric Drug Therapy*, edited by G. J. Sarwer-Foner. Springfield, Ill.: Thomas, 1960.

62. Ronald A. Sandison, "Group Interchange," in footnote 5; p. 91. Any remaining skeptics on the score of expectation and attitude may want to take note of Cohen's caveat: "Invariably, those who take hallucinogenic agents to demon-

strate that they have no value in psychiatric exploration have an unhappy time of it. In a small series of four psychoanalysts who took 100 gamma of LSD, all had dysphoric responses." See footnote 44; p. 32.

63. See footnote 34; p. 14.

64. Ralph Metzner, George Littwin, and Günther Weil, "The Relation of Expectation and Setting to Experiences with Psilocybin: A Questionnaire Study," dittoed, Harvard Univ., 1963. Charles Savage, Willis Harman, James Fadiman, and Ethel Savage, "A Follow-up Note on the Psychedelic Experience," mimeographed, International Foundation for Advanced Study, 1963.

It may be noted that only slightly lower figures have been reported without explicit preparation of the subjects—though with an "atmosphere" that was enthusiastic and supportive. See Keith S. Ditman, Max Hyman, and John R. B. Whittlesey, "Nature and Frequency of Claims Following LSD," *J. Nervous and Mental Disease* (1962) 134:346-352.

65. For example, see Jerome D. Frank, *Persuasion and Healing: A Comparative Study of Psychotherapy*. Baltimore, Johns Hopkins Press, 1961. More specifically, see Colin M. Smith, "Some Reflections on the Possible Therapeutic Effects of the Hallucinogens," *Quart. J. Studies on Alcohol* (1959) 20:292-301.

66. See footnote 10.

67. Alan W. Watts, *This is IT*. New York: Pantheon, 1960; p. 17.

68. Alan W. Watts, *The Joyous Cosmology*. New York: Pantheon, 1962.

69. Timothy Leary, "The Influence of Psilocybin on Subjective Experience," paper presented at NIMH, Bethesda, Md., May 29, 1962.

70. Aldous Huxley, *Heaven and Hell*. New York: Harper, 1956; p. 63.

71. See footnote 1; pp. 213-222.

72. Ruth Benedict, *Patterns of Culture*. New York: New American Library, 1934; pp. 72-73.

73. See footnote 72; pp. 74-75.

74. Abraham H. Maslow, "Cognition of Being in the Peak Experience," *J. Genetic Psychology* (1959) 95:43-66.

75. See footnote 39.

76. Keith S. Ditman and John R. B. Whittlesey, "Comparison of the LSD-25 Experience and Delirium Tremens," *Arch. General Psychiatry* (1959) 1:47-57. Colin M. Smith, "A New Adjunct to the Treatment of Alcoholism: The Hallucinogenic Drugs," *Quart. J. Studies on Alcohol* (1958) 19:19-31. By the way, the LSD experience and delirium tremens were found to be distinctly *dissimilar* in most respects.

77. See Sherwood and co-workers, in footnote 8.

78. Abram Hoffer, "Group Interchange," in footnote 5; pp. 59, 114-115.

79. J. R. Ball and Jean J. Armstrong, "The Use of LSD-25 in the Treatment of the Sexual Perversions," *Canadian Psychiatric Assn. J.* (1961) 6:231-235.

80. See footnote 79; p. 234.

81. See Maclean and co-workers, in footnote 7.

82. A personal communication (1963) from J. Ross Maclean indicates sustained success in 270 additional postpublication cases of "psychedelic treatment."

83. See MacLean and co-workers, in footnote 7; p. 38.

84. The preparation of the subject and the conduct of the 12-hour session were patterned along the lines described by Blewett and Chwelos. See Duncan B. Blewett and Nicholas Chwelos, *Handbook for the Therapeutic Use of Lysergic Acid Diethylamide-25, Individual and*

Group Procedures; to be published.

85. Sven E. Jensen, "A Treatment Program for Alcoholics in a Mental Hospital," *Quart. J. Studies on Alcohol* (1962) 23:315-320; pp. 317-319.
86. "Apparent Results of Referrals of Alcoholics for LSD Therapy," Report of the Bureau on Alcoholism, Saskatchewan Department of Public Health, Regina, Saskatchewan, Dec. 31, 1962; p. 5.
87. Timothy Leary, Ralph Metzner, Madison Presnell, Gunther Weil, Ralph Schwitzgebel, and Sara Kinne, "A Change Program for Adult Offenders Using Psilocybin," dittoed, Harvard Univ., 1962.
88. Timothy Leary, "Second Annual Report: Psilocybin Rehabilitation Project," dittoed, Freedom Center, Inc., 1963.
89. See Sherwood and co-workers, in footnote 8; p. 370.
90. See footnote 89 and Savage and co-workers in footnote 64.
91. See David Rosenthal and Jerome D. Frank, "Psychotherapy and the Placebo Effect," *Psychol. Bull.* (1956) 53:294-302.
92. Timothy Leary, "How to Change Behavior," pp. 50-68, in *Clinical Psychology, XIV International Congress of Applied Psychology*, Vol. 4, edited by Gerhard S. Neilson; Copenhagen, Munksgaard, 1962; p. 58.
93. Wilson Van Dusen, "LSD and the Enlightenment of Zen," *Psychologia* (1961) 4: 11-16, p. 11.
94. See footnote 1; p. 242.
95. See footnote 1; pp. 242-243.
96. See footnote 1; p. 195.
97. See footnote 72; p. 78.
98. See Chwelos and co-workers, in footnote 7; p. 583.
99. See footnote 7; p. 584.
100. See footnote 1; pp. 190-194.
101. Anthony F. C. Wallace, "Stress and Rapid Personality Changes," *Internat. Record Med.* (1956) 169:761-774; p. 770.
102. William Sargent, *Battle for the Mind: A Physiology of Conversion and Brain-washing*. Garden City, N. Y. Doubleday, 1957.
103. See Ditman and co-workers, in footnote 64.
104. For example, see Daniel E. Sheer, Editor, *Electrical Stimulation of the Brain*. Austin: Univ. of Texas Press, 1961.
105. See footnote 72; p. 72.

12. LYSERGIC ACID DIETHYLAMIDE: AN EDITORIAL

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Lysergic acid diethylamide (LSD-25) was introduced as a psychotomimetic drug and became a powerful investigative tool. Significant research was conducted on animals and later on humans. However, the comparison of the psychological and physiological effects of LSD-25 with those of schizophrenia could not be validated after careful study, and the concept of a "model psychosis" was found to be weak.

LSD-25 then was used as an adjunct to psychotherapy, presumably loosening defenses and facilitating "insight." The affective release interested many psychiatrists who administered the drug to themselves, and some, who became enamored with the mystical hallucinatory state, eventually in their "mystique" became disqualified as competent investigators. Lay people "bootlegged" the drug for its pleasurable effect, and a few writers published stories and books on the subject for the lay public. Motion picture actors extolled its benefits, and television psychiatrists enacted its curative powers.

Now the deleterious effects are becoming more obvious. Latent psychotics are disintegrating under the influence of even single doses; long-continued LSD experiences are subtly creating a psychopathology. Psychic addiction is being developed, and the lay public is looking for psychiatrists who specialize in its administration.

Here again is the story of evil results from the ill-advised use of a potentially valuable drug, due to unjustified claims,

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indiscriminate and premature publicity, and lack of proper professional controls. Indeed this editorial is a warning to the psychiatric profession that greater morbidity, and even mortality, is in store for its patients unless controls are developed against the unwise use of LSD-25.

13. THE PSYCHOTOMIMETIC DRUGS: AN OVERVIEW

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MARTIN M. KATZ, PH.D.*

For many years several pharmacologically similar drugs—lysergic acid diethylamide (LSD-25), psilocybin, and mescaline, among others—have been of special scientific interest. In volunteer subjects, they have been known to produce a variety of intense and unusual psychic effects. These include bizarre visual phenomena, ranging from heightening of the apparent brightness or beauty of colored objects in the environment, through distortions in the perceived nature or meaning of real objects (illusions) to true visual hallucinations of colors, shapes, or even of complex scenes or events. These visual phenomena are usually accompanied by intense and often rapidly shifting emotional experiences (ranging from mild apprehension to panic, severe depression or mystical elation) or by concurrent emotions (such as depression and joy) which are not experienced simultaneously under ordinary conditions. Subjects describe changes in body image, the body or its parts appearing larger or smaller, intense feelings of de-personalization, including states in which the subject believes he is outside his own body viewing it from afar, or even sensations of death and rebirth.

Occasionally there may be loss of insight into the drug-induced nature of these sensations, with paranoid delusions about other people in the environment who are believed to be trying to harm or kill the subject. Intense self-loathing with suicidal impulses or great feelings of mystical revelation can also occur. Distortions in experiencing passage of time and,

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more rarely, disorientation as to time and place can occur. The exact quality, nature, and content of these experiences appear to depend in a complex manner on the personality and expectations of the subject, the dose of the drug, and the setting in which the drug is administered (1,2).

Particularly since the synthesis of LSD-25 in 1943, there has been intense scientific interest in the possibility that these agents reproduce naturally occurring schizophrenic states. After twenty years of research, it seems most reasonable to state that these drugs can produce a state which is similar but not identical to naturally occurring schizophrenia, and which may also resemble the toxic deliria caused by other agents such as atropine or scopolamine. Since subjects acquire tolerance to LSD, psilocybin, and mescaline after repeated administration (3-6), the possibility that such compounds are of etiological significance in naturally occurring schizophrenia seems remote.

Because of the assumed similarities of the state produced by these agents to schizophrenia, they have been termed "psychotomimetics" or mimickers of psychosis. Even less accurately, because of the visual effects, they have been termed, "hallucinogenics." These names reflect a careful scientific concern with potentially dangerous, though unique drugs. More recently Osmund (7) has coined a term, "psychedelic," meaning "mind manifesting," which has begun to be used widely. Its implications are certainly more vague than those of the other terms. In the contexts in which it is used, it seems to imply that these drugs bring to the fore aspects of the subject's mind previously hidden or at least less manifest, and suggests that these effects may be "good." Assuredly, many investigators believe that the effects of these drugs result in an intensity of personal experience and emotion more meaningful than the terms "psychotomimetic" or "hallucinogenic" imply.

Therein lies the present problem in the use or abuse of these agents. Rather than being the subject of careful scientific inquiry, these agents have become invested with an aura of magic, offering creativity to the uninspired, "kicks" to the jaded, emotional warmth to the cold and inhibited, and total personality reconstruction to the alcoholic or the psychotherapy-resistant chronic neurotic. On the West Coast, the effects are judged by some to be related to the insights of Zen Buddhism; on the East Coast, they are judged by others to

lead the way to a new and free social order. Like the broom in "The Sorcerer's Apprentice," the drugs seem to have walked out of the laboratory into the outside world on their own feet and to have turned on the unsuspecting apprentice.

To be sure, the therapeutic uses of these agents have been pioneered by psychiatrists in many instances, including Abramson (8), Frederking (9), Osmond (7), Savage (10, 11), and Sandison (12, 13). With much of the published work, however, there is an implicit or explicit attitude that the self-knowledge of the leverage for self-change allegedly effected by these drugs may be of value or benefit to individuals who do not ordinarily consider themselves psychiatrically ill. At the extreme of this attitude-dimension is the International Foundation for Inner Freedom, formed by two psychologists, Doctors Leary and Alpert, who claim that these agents (14) should not be considered drugs at all but should be classed with poetry, music, literature, and art, and should be available to all men wishing to improve their minds and "expand their consciousness." There is, apparently, an active black market in these drugs in major urban centers, where these drugs may have more snob appeal than diacetyl morphine (heroin), marihuana, or dextroamphetamine.

Major attention has been focused on these drugs, their effects, and the personal eccentricities and misadventures of the more notorious people advocating their use by a series of articles in national popular magazines—*Look* (14), *The Reporter* (15), *Cosmopolitan* (16), *Time* (17), the *Saturday Evening Post* (18), and the *Ladies' Home Journal* (19). As with other forms of illicit-drug abuse, it is hard to tell the real extent or seriousness of the psychotomimetic problem, despite this rather florid publicity.

The present article has two purposes: first, to underline the real and important dangers inherent in the self-administration of these agents or in their administration by uncritical enthusiasts and inadequately trained individuals; second, to stress that some of the therapeutic claims made for these drugs are of sufficient potential importance to warrant serious, unprejudiced study.

Psychotomimetic Agents as Therapy

We take the second issue first, since the first issue has already been outlined above. There have been an increasing series of

studies reporting LSD-25 and/or mescaline to be effective in the treatment of chronic alcoholism, with remission rates of approximately 50 percent being usually described (20-25).

Similar results have been observed in the treatment of chronic neuroses (9, 10-13, 26, 27). The claims for the utility of these drugs in the treatment of chronic neuroses range from dramatic improvement to modest descriptions of improved communication with the therapist, emotional release, and ability to talk about difficult personal topics. There have also been informal claims that these drugs are useful in producing valuable personality changes in juvenile delinquents and other individuals with serious personality disorders.

In brief, it is claimed that these agents are of striking value in some groups of patients who are highly resistant to more conventional forms of psychotherapy or pharmacotherapy. Many of these claims stress, further, the occurrence of basic changes in attitudes or personality, not mere symptom reduction. If these claims are confirmed, this new therapeutic approach could add substantially to the psychiatrist's tools. We must stress that none of these claims are based on detailed, carefully controlled studies designed to be free from possible distortions due to bias or enthusiasm. Further, the terms in which the effects are often explained are not formulations common either to medicine in general or to psychiatry in particular.—"Our own conception is that people live an inauthentic existential modality (i.e., alienation), and that illness arises from an inability to see meaning in life. LSD provides an encounter which brings a sudden liberation from ignorance and illusion, enlarges the spiritual horizon and gives a new meaning to life" (11).—Such explanations may have a mystical or philosophical sound which appeals to the enthusiast, but they are likely to produce doubt or even violent disbelief and concern in physicians used to a more pragmatic approach and in scientists used to a more communicative language. The present authors occupy a skeptical middle position, favoring the Scotch verdict of "not proven." We feel strongly that this approach to therapy should neither be rejected out of hand as "crazy," nor accepted and applied in an uncritical manner, but should be subjected to careful study under closely controlled conditions.

It is important also to note that the "treatment" discussed above is not a drug therapy in the conventional sense. It is,

rather, a complex mixture of drug therapy and brief psychotherapy, with one or more prolonged sessions, lasting eight to ten hours, during which the patient experiences the drug effect and discusses his experiences and the light they throw on his problems, needs, and past experiences in a prolonged and intensive manner. The drug session is usually preceded by several interviews in which the patient's problems and the changes he desires from treatment are explored, a relationship with the therapist is established, and strong positive expectations concerning the drug session are developed. The treatment, as administered by many, seems to include strong suggestion, aspects of dynamic insight-oriented psychotherapy, mystico-religious exhortation, catharsis, and pressure on the patient to confront his problems head on. It is possible that with all these components the intense and bizarre drug experience may indeed permit an impact on the subject not obtainable by any other means. It is difficult to break down the therapeutic process into its component parts. The proportions of the components may vary from therapist to therapist or from patient to patient, especially with regard to the amount of therapist interpretation and the extent of his active participation in the solution of the patient's problems.

When this treatment is given in a hospital setting, there is also considerable personal interaction between the individual patient and other patients who have already undergone this experience or are about to undergo it. The whole milieu has an aura of intense conviction that change will occur and that the experience will be highly meaningful and highly therapeutic. Intensive group therapy sessions may occur before and after the actual LSD experience. The entire therapeutic process, including preparation for the psychotomimetic experience and subsequent re-interpretation of it, may resemble the group interaction common to successful experience with Alcoholics Anonymous. It may resemble also the intense personal interaction used at the National Training Laboratory, at Bethel, Maine (16), where revelations and emotional experiences are created by intensive interpersonal and group interaction alone, without the aid of any drug.

Problems in Evaluation

This form of treatment is, therefore, highly intense and highly complex, necessitating strong convictions and great sensitivity

on the part of the therapist, and requiring the creation of a social milieu in which all patients not only share in a strong conviction that change will occur but also hold a personal commitment to make certain that change does occur. Dramatic short-term effects under such conditions have been described. The durability on prolonged follow-up study of acute changes in behavior, induced by therapy or perhaps even changes in personality, is yet to be determined.

Several problems face investigators who wish to make careful studies of such a complex treatment. It seems likely that people who administer the treatment effectively must be convinced of its efficacy. Further, they must be highly biased in favor of it for the treatment to have the described effect. The physician may be so involved in the treatment that he can not evaluate its effects objectively. Independent evaluation of outcome is, therefore, essential to any good research design in this area. This independent procedure should make it easier to evaluate the efficacy of treatment in a condition like chronic alcoholism where an objective index of success or failure, namely, excessive drinking, exists.

A much more complex problem must be faced in evaluating the effects of these drugs on individuals with personality disorders, severe or mild. Here a value judgment must be made concerning the goodness or badness of the changes which occur, if any. For example, how should one evaluate outcome if an individual were to divorce his wife and take a job which paid him less but which he said he enjoyed more than his previous job? If a person becomes more relaxed and happy go lucky, more sensitive to poetry or music, but less concerned with success or competition, is this good? There are suggestions that individuals who take drugs like LSD either illicitly or as therapy may become more detached from reality or less concerned with the real world, more "transcendental." A few of the reports concerning this treatment, both published and unpublished, mix a variety of poetic metaphors and occasionally bizarre-sounding elaborations with serious descriptions of the details of treatment and the valuable changes to be expected. For example, certain kinds of artistic experience, certain types of music, etc., are said to be particularly valuable in inducing the desired effects. Specific components of the therapeutic process described may often have a bizarre—almost schizophrenic—component, which tends to make serious

investigators discount this whole area as a delusional belief shared by a group of unstable clinicians and lay enthusiasts. Whether or not this criticism is justified can be judged only by future studies designed to be immune to such criticism. Future studies must decide whether these treatments do indeed have promise for specific clinical conditions which are now highly resistant to conventional psychiatric approaches.

The Current Situation

At present a small number of facts are strikingly clear. None of these drugs has been proved to be effective or safe therapies for any psychiatric condition. Because of the apparent potential of these agents for producing bizarre behavior, suicidal impulses, or undesirable personality change in some subjects or patients receiving them (28, 29), there is some question as to whether they should be administered outside a hospital. They are not available for general prescription use, and there is some question whether they should ever be so available. Because neither their safety nor their efficacy has been adequately demonstrated, two of these agents, LSD-25 and psilocybin, are being controlled as investigational drugs in conformity with the existing Food and Drug Administration regulations under the sponsorship of the drug company which holds the patent rights for both substances. It is our understanding that this company is at present providing these agents for scientific study only to investigators functioning within federal or state agencies with formal approval of the agency, or to investigators doing research under grants from these agencies. This policy decision has been made presumably to insure that these drugs will not be misused by unqualified or unscientific investigators without adequate checks and balances necessary for safe and careful research. The other agent, mescaline, is not to our knowledge being sponsored currently by any pharmaceutical company, although it can be obtained for animal or biochemical research from certain biochemical supply houses.

Legally none of these agents can be used, even on an investigational basis, except by investigators who have filed a formal research plan with the FDA through a sponsoring pharmaceutical company, or by investigators who have themselves assumed sponsorship and satisfied the FDA concerning the safety of the agents and their proposed research use in man. Any reported use of these agents outside of these approved

channels should be reported to the FDA. Since there have been a number of reports of suicide attempts or prolonged psychotic reactions requiring psychiatric hospitalization in persons obtaining these drugs outside of approved medical channels, their indiscriminate unsupervised use is clearly dangerous. In addition, there have been reports of insidious personality changes occurring in individuals who have indulged in repeated self-administration of these agents. It is, of course, difficult to determine whether or not some of the bizarre behaviors of such individuals are a product of the drug itself or are a product of the underlying personality aberrations which lead the individuals to seek out these agents. In any case, there is no evidence that uncontrolled self-administration of these drugs is either safe or desirable. There has also been concern over the possibility that investigators who have embarked on serious scientific work in this area may have been subject to the deleterious and seductive effects of these agents.

These statements are made in hope that warranted concern over the illicit abuse of these agents will not prevent systematic study of their possible potential in the treatment of psychiatric conditions which are otherwise severely treatment resistant.

REFERENCES

1. Hyde, R. W., Von Mering, O., and Morimoto, K. "Hostility in Lysergic Psychosis," abstracted. *J. Nerv. Ment. Dis.*, **118**:266-267, 1953.
2. Unger, S. M. Mescaline, LSD, Psilocybin, and Personality Change." *Psychiatry*, **26**:111-125, 1963.
3. Isbell, H. "Comparison of Reactions Induced by Psilocybin and LSD-25 in Man," *Psychopharmacologia*, **1**:29-38, 1959.
4. Isbell, H., et al. "Studies on Lysergic Acid Diethylamide: I. Effects in Former Morphine Addicts and Development of Tolerance During Chronic Intoxication." *AM A Arch. Neurol. Psychiat.*, **76**:468-478, 1956.
5. Isbell, H., et al. "Cross Tolerance Between LSD and Psilocybin." *Psychopharmacologia*, **2**:147-159, 1961.
6. Wolbach, A. B. Jr., Miner, E. J., and Isbell, H. "Comparison of Psilocin with Psilocybin, Mescaline and LSD-25." *Psychopharmacologia*, **3**:219-223, 1962.
7. Osmond, H. "Review of Clinical Effects of Psychotomimetic Agents: I. Psychotomimetic Agents: Clinical and Biochemical Aspects." *Ann. N.Y. Acad. Sci.*, **66**:418-434, 1957.
8. Abramson, H. A. "Lysergic Acid Diethylamide (LSD-25): XIX. As Adjunct to Brief Psychotherapy, with Special Reference to Ego Enhancement," *J. Psychol.*, **41**:199, 1956.
9. Frederking, W. "Intoxicant Drugs (Mescaline and Lysergic Acid Diethylamide) in Psychotherapy." *J. Nerv. Ment. Dis.*, **121**:262-266, 1955.
10. Savage, C., et al. "Evaluation of Psychedelic Experience,"

read before the Annual Meeting of the American Psychiatric Association, St. Louis, May 9, 1963.

11. Savage, C., Terrill, J., and Jackson, D. D. "LSD, Transcendence, and New Beginning." *J. Nerv. Ment. Dis.*, **135**:425-439, (Nov.) 1962.
12. Sandison, R. A. "Psychological Aspects of LSD Treatment of Neuroses." *J. Ment. Sci.*, **100**:508-515, 1954.
13. Sandison, R. A., and Whitelaw, J. D. "Further Studies in Therapeutic Value of Lysergic Acid Diethylamide in Mental Illness." *J. Ment. Sci.*, **103**: 332-343, 1957.
14. Weil, A. T. "Strange Case of Harvard Drug Scandal." *Look*, **27**:38-48, 1963.
15. Gordon, N. "The Hallucinogenic Drug Cult." *Reporter*, **22**:35-43, 1963.
16. Gaines, B. "LSD: Hollywood's Status-Symbol Drug." *Cosmopolitan*, **155**:78-81, 1963.
17. "Instant Mysticism." *Time*, **82**:86-87, 1963.
18. Kobler, J. "Dangerous Magic of LSD." *Saturday Evening Post*, **38**:30-40, 1963.
19. Goldman, R. P. "Instant Happiness." *Ladies' Home Journal*, **80**:67-71, 1963.
20. Chwelos, N., et al. "Use of D-Lysergic Acid Diethylamide in the Treatment of Alcoholism." *Quart. J. Stud. Alcohol*, **20**:577-590, 1959.
21. Ditman, K. S. "Use of LSD in Treatment of Alcoholic," read before the New York Medical Society on Alcoholism, Nov. 15, 1962.
22. Ditman, K. S., Hayman, M., and Whittlesey, J. R. B. "Nature and Frequency of Claims Following LSD." *J. Nerv. Ment. Dis.*, **134**:346-352, 1962.
24. MacLean, J. R., et al. "Use of LSD-25 in Treatment of Alcoholism and Other Psychiatric Problems." *Quart. J. Stud. Alcohol*, **22**:34-45 (March) 1961.
25. O'Reilly, P. O., and Reich, G. "Lysergic Acid and the Alcoholic." *Dis. Nerv. Syst.*, **23**: 331-334, 1962.
26. Smith, C. M. "Some Reflections on Possible Therapeutic Effects of Hallucinogens with Special Reference to Alcoholism." *Quart. J. Stud. Alcohol*, **20**:292-301, 1959.
27. Eisner, B. G., and Cohen, S. "Psychotherapy with Lysergic Acid Diethylamide." *J. Nerv. Ment. Dis.*, **127**:528-539, 1958.
28. Martin, A. J. "LSD Treatment of Chronic Psychoneurotic Patients Under Day Hospital Conditions." *Int. J. Soc. Psychiat.*, **3**:188-195, 1957.
29. Cohen, S., and Ditman, K. S. "Complications Associated with Lysergic Acid Diethylamide (LSD-25)." *JAMA*, **181**:161-162 (July 14) 1962.
30. Cohen, S. "Lysergic Acid Diethylamide : Side Effects and Complications." *J. Nerv. Ment. Dis.*, **130**:30-40, 1960.
31. Klee, G. D. "Lysergic Acid Diethylamide (LSD-25) and Ego Functions." *Gen. Psychiat.*, **8**:461-474, 1963.
32. "National Training Laboratory in Group Development: Explorations in Human Relations Training: Assessment of Experience 1947-1953." Washington, D.C.: National Training Laboratory, 1957.
33. Sherwood, J. N., Stolaroff, M. J., and Harman, W. W. "Psychedelic Experience: New Concept in Psychotherapy." *J. Neuropsychiat.*, **4**:69-80, 1962.

14. PAIN AND LSD-25: A THEORY OF ATTENUATION OF ANTICIPATION

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LSD has a profound and incisive impact on the mental and autonomic apparatus of human beings. It has aroused widespread interest in various fields, and the search for new and therapeutic uses goes on. This study explores the therapeutic possibilities of LSD in the treatment of the painful terminal stages of serious disease.

The treatment of painful and desperate situations where death is imminent has been relatively neglected in the literature. Observing patients in such straits, one is struck with the fact that some mechanism must protect them from the devastating realization of hopelessness. Gravely ill patients can sometimes give voice to such ideas, but full realization is nonetheless lacking. The "desperate" situation of the terminal patient is only quantitatively different from that of any person who can anticipate the possibility of death at any time with some probability, and ultimately, with certainty. We can assume, therefore, that the mechanism that protects us daily from the realization of our doomed situation operates with greater force in the terminal patient.

Pharmacologic help to reduce anticipation may be very useful in situations where such anticipation can offer nothing to the welfare of the patient, and can only accentuate his feeling of helplessness.

It is one of the striking features of the psychedelic experience that pursuit of goals and purposeful activity lose their compelling character. This implies a change in the apprehen-

sion of the future and in the ability to anticipate, which is prerequisite for the whole edifice of human civilization. Anticipation is contingent on the ability to use words meaningfully, to form and manipulate symbols. The power of symbol formation enables the individual to enact a situation "in theory," without actual sensory input. Anticipation, of necessity, deals with events which can be apprehended "in theory" only.

In the psychedelic experience, words lose their significance. While the superficial symbolic structure remains intact, permitting simple "conversations," the full resonance (1) of the symbol, in which it is capable of producing the same impact as real sensory input, is greatly diminished. As is well known, the power of sensory input is correspondingly increased. Should this input contain evidence that danger is imminent, then the individual will react appropriately, but he will not anticipate danger in the absence of sensory evidence.

The preverbal infant depends in just this way on sensory input, and in this way the person under LSD resembles such a child, who flutters from one pleasurable experience or fantasy to another, oblivious of consequences.

In modern Western civilization we are very aware of the future, as shown by our interest in "planning" for it and "insuring" it. We depend on anticipation not only for orientation but also for defense and procurement of food (maintenance of existence) (2). This emphasis on anticipation makes the desperate situation particularly painful, while it is precisely in this situation that the individual no longer needs anticipation for survival.

Thoughts, fantasies, and sensory input, occurring in fact, in the present, have a resonance in the central nervous system along channels created by past experience, which greatly increases and enriches their significance. These channels are temporary connections established by conditioning experiences in the past of the individual. Through this conditioning synaptic transmissions can be facilitated, inhibited, or completely blocked. This spreading of a sensory input via temporary (and permanent) connections is called psychic resonance. Words restrict this resonance; it is diminished by the "naming" of the experience. With the decrease in the power of words in the psychedelic experience, their containing ability is also decreased, and the immediate sensory life gains in range

of significance as well as strength. This makes it possible for the gravely ill individual to be led into an expanded, awesome sensory world, hitherto unknown to him, and thus to be distracted from his failing body (3).

Thus, we elaborated so far on two characteristics of the LSD experience which are of possible therapeutic use in situations where anticipation is of less use than in ordinary life: 1) the loss of the ability to anticipate, through the lessening of the power of words, and 2) the expansion of the immediate sensory life.

Symbol formation and anticipation, so vital to survival in ordinary life, serve in grave situations only to augment the torture of the future. The LSD experience may therefore be of benefit in such situations. Thus, it seems possible that in addition to its very potent analgesic qualities which we described in a previous report (1963), LSD has even more penetrating psychic actions in the area of emotional reactions to grave disease and impending death.

In addition to the foregoing, four factors are possibly responsible for the analgesic effect of LSD: First, it seems to deprive the individual of his ability to concentrate on one specific sensory input, even if this input is of urgent survival value. Second, and additive to the previous point, it seems to give all sensory input almost equal importance. "Minor" sensations, namely those of less importance for survival, make a claim on the patient's attention equal to those of major survival significance. Third, it diminishes cortical control of thoughts, concepts, or ideas and reduces their significance in control of vegetative function and behavior in general. The meaning of pain, as discussed below, and its frightful psychic resonance (such as possible doom and destruction) is greatly alleviated. The most incisive fourth factor is the fact that LSD obliterates the individual's ego boundaries (4). In consequence, a geographic separation can more easily be made between the self and the ailing part (5).

Beyond the fundamental tension of the pain affect (tension between the desire to distantiate oneself from the ailing part, and the desire to remain whole), a sensory input which is unremovable (such as pain) can produce a specially unbearable tension by virtue of its very inevitability. This inevitability has its own psychic resonance (primarily in the area of anticipa-

tion of death and destruction, as discussed above) which contributes to the total psychic resonance of the pain experience. Pain tension is more easily tolerable if, either in fantasy or reality, it can be escaped from, if it is avoidable, or if there is some escape hatch through which the tension can be released. Further observations have led us to feel that maneuvers such as shouting, twisting, turning, and restlessness in general are basically attempts to search for such an escape hatch.

In the very sick patients involved in this study, inevitability becomes a major component in the unbearableness of the pain tension; and the possibility of escape, through loosening of the ego boundaries, may be exactly what LSD offers.

The unbearable tension of inevitable pain, continued over time, will produce depression, which may lead to early and precipitous death. This is reminiscent of the well-known behavior of animals in a Skinner box (6), when inescapable electric shocks are administered. First, the animal will behave like a patient with renal colic; he will jump around, fuss, grimace, and twist. He hopes that some of this maneuvering will afford him relief and escape. After a certain time interval the animal will become quiet; will defecate and urinate in last anguish; and will in general display inhibited behavior. This animal behavior, of course, is based on the conditioned reflex. As in any conditioning, if avoidance behavior becomes futile and cortical excitation is spent and frustrated, inhibited behavior sets in (7). This inhibited behavior resembles that of a patient in chronic pain due to metastatic malignant disease.

In humans this is further complicated by the ability to anticipate future events, through words, concepts, and ideas, in addition to immediate sensory input. Thus, the hopelessness of the situation can be anticipated (see above), and can further exert an inhibiting influence on human behavior.

LSD, as stated, diminishes cortical control of words and thoughts; changes the mechanisms of verbal "meaning," and reduces their impact on behavior. Thus, the patient is partially deprived of his anticipatory ability, and his immediate sensory input becomes relatively more important and at the same time deprived of its survival content. In this way it is possible to understand why the "painful" sensory input becomes subservient to other less meaningful sensations.

Methodology

Only one-dose administrations of LSD were undertaken in this study. One hundred and twenty-eight patients were selected from Cook County Hospital. All were preterminal, meaning that death could be foreseen within one to two months. All suffered from malignant diseases with metastases. The diagnoses and sex and age range can be seen in Figure 1.

FIGURE 1

NUMBER OF PATIENTS: N-128

MEAN AGE 53

FEMALE 103

MALE 25

DIAGNOSES:	CA OF BREAST WITH METASTASES	44
	CA OF CERVIX WITH METASTASES	48
	CARCINOMATOSIS	18
	CA OF DIGESTIVE TRACT	18

DOSAGE 100 mcg LYSERGIC ACID DIETHYLAMIDE

The following observations were conducted (for detailed description of observations see "Results"):

1. Pain intensity;
2. Affective changes;
3. Approach to illness and death;
4. Sleep patterns;
5. Visual disturbances and hallucinations;
6. Fear and panic reaction.

No other analgesic medication was given during the acute phase of the LSD reaction. Food was not withheld, and most patients were hungry at one time or another during the reaction. Antibiotic, cytotoxic, and hormonal medication was continued as per schedule.

Such a study cannot be conducted double blind, for it is immediately obvious when a patient has received LSD. The patients also become immediately aware that something incisive has happened to them. While they were not forewarned of the LSD administration in this study they were carefully observed for the first signs of drug effects. As soon as these were noted, they were told that they had received a potent medicine, that they would feel peculiar, and that this feeling would pass shortly. This was done to obviate additional anticipation of panic and fear.

Results

We found about 30 percent of the patients unwilling to repeat the administration. This could not be improved by co-administration of other psychotropic drugs, such as chlorpromazine, MAO inhibitors (Imipramine), hypnotics (phenobarbital), or strong narcotics (meperidine). Combined administration of the above drugs produced either no change in the LSD reaction, or obliteration of the reaction, or an increase in the distress of the patient. We could not predict which of these changes of the LSD reaction would occur in a given case. This increase in distress may have been due to the fact that a person in pain can become very sensitive to additional sensory input, which approaches but does not reach the intensity necessary to distract him from his pain (for example, the reaction of a person

with a toothache to the ringing of a telephone). In patients for whom the LSD experience was modified by administration of another drug, the increased sensory input produced by LSD may have been just enough to function as an annoyance, while not enough to compete successfully with the painful input.

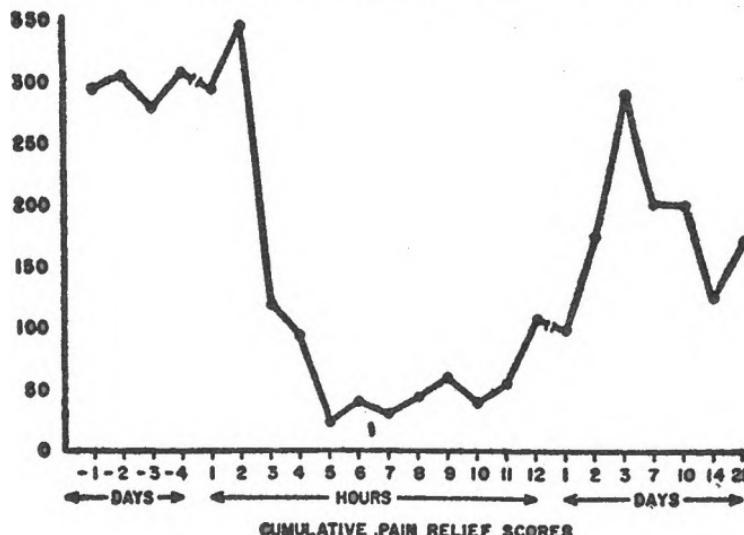
Observations made of the analgesic effects of LSD and accompanying reactions fall into six categories.

1. *Pain relief.* Degree of pain was judged by the patient's statement, the observer's opinion, the behavioral characteristics of the patient, and the opinion of ward personnel. Even weight was given to each of these factors. These impressions were graded in four categories: no pain (0), mild (1), severe (2), and intolerable pain (3).

The over-all pain intensity was appraised by constructing a pain-relief score, comprising the additive total of the pain intensities for all patients who were in pain, per time unit. This method was selected for its simplicity and over-all informative value. It does not tell the number of patients with a given pain intensity, but it does tell the total pain present at a given time. (Figure 2.) A precipitous drop in pain occurred about two to three hours after LSD administration. This pain relief lasted

FIGURE 2

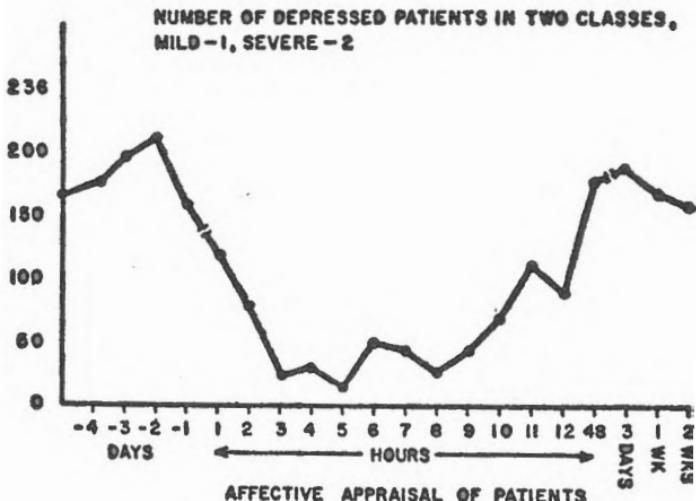
0: NO PAIN, 1: MILD PAIN, 2: SEVERE PAIN, 3: INTOLERABLE PAIN.



twelve hours, but the total pain intensity was less for a protracted period (three weeks). This does not mean that the individual pain experienced by each patient was less.

2. Affective changes. Depressions were classed in three categories: none (0), mild (1), and severe (2). Included here were, of course, reactive depressions due to the severe and hopeless illness. Depressions manifest themselves in many ways: somatizations, superimposed on the actual discomfort; a nagging attitude on the part of the patient, which antagonized the ward personnel; motor hypo- or hyperactivity; general lethargy; crying and discussions of hopelessness and doom. From these various signs we made an intuitive appraisal of the patient's depression. We used two classes only, because any further subdivision would only have heightened the ambiguity of this appraisal. Again, the scores of total depression rather than individual figures are given. An additive, cumulative index was created, by numerically adding the degrees of depression. Patients without obvious depression were not counted. There was a general lift of mood, almost euphoria, which lasted for about eleven to twelve hours, after which time the mood fell to its original level.

FIGURE 3



3. Approach to illness and death. The patient's approach was classified as: rather indifferent (0), concerned (1), or

very concerned (2). This is a most difficult observation to make, and it was done in an intuitive manner. Only rarely did we resort to a direct question. The appraisal was made by means of a short and hopefully meaningful "chat." It is, of course, intimately associated with an appraisal of depression, but we deemed it worth-while to develop a separate score. Under LSD, patients were so strikingly unconcerned about death or any other anticipatory concern that this seemed important. We encountered rather often definite evidence of depression (like somatization or nagging attitudes by patients) associated with an air of unconcernedness. The patient was able to state that death was near, that the situation was hopeless, but felt that this did not matter. By the same token, we observed concern by the patient about their future, also without marked depressive features. The earlier rise of the index of concern before the depression about nine to twelve hours after LSD administration reflects this phenomenon. (Figure 4.)

FIGURE 4



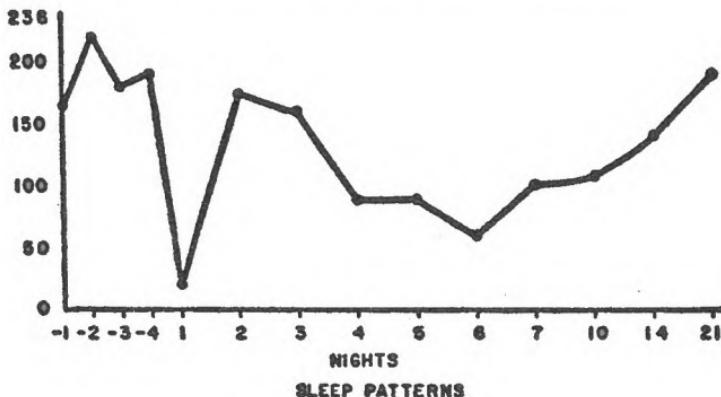
4. *Sleep patterns.* These were classified as: no disturbance (0), mild disturbance (1), and insomnia (2). This parameter proved to be rather conclusive and very informative. Here, too, we constructed a cumulative index composed of the total additive score of sleep disturbances (1). The patients sleeping well were not counted.

The sleep patterns too reflect the degree of depression. But as the degree of concernedness was at variance with the degree of depression, so was the sleep pattern. The first night after LSD administration was almost invariably a good one. After that we noted a meaningful reduction of sleep disturbances up to about ten nights, which is also the time when concern about the morbid condition returned.

The last two parameters which we used concern aspects of

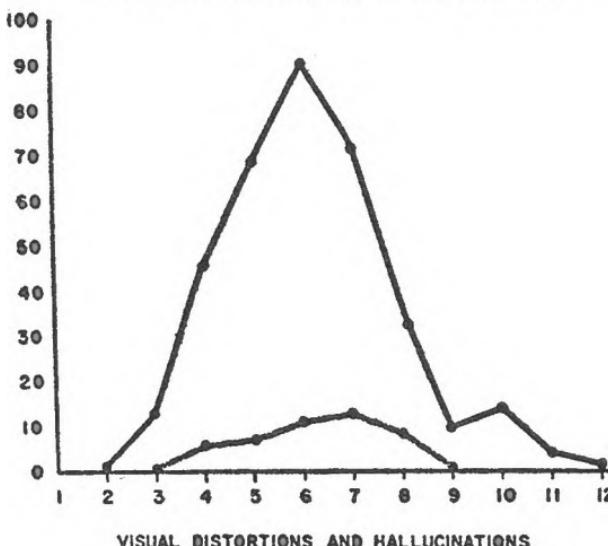
FIGURE 5

NO DISTURBANCE:0, MILD DISTURBANCE:1, INSOMNIA:2.



the LSD reaction itself, namely the most disturbing and potentially alarming ones.

5. *Visual distortions and hallucinations.* These were classified as: none (0), mild (1), and disturbing (2). As stated last year, the degree and frequency appeared less than that for normal volunteers. Those classified as "mild" were reported by the patients with a smile and in a silly fashion. The additive and cumulative index of mild and disturbing visual distortions and hallucinations is contained in the upper [curve]. (Figure 6.) The lower [curve] comprises the incidence of hallucinations, counted separately and regardless of their severity. The difference between hallucinations and visual distortions is the patient's belief in the actual occurrence of the event he sees (hal-

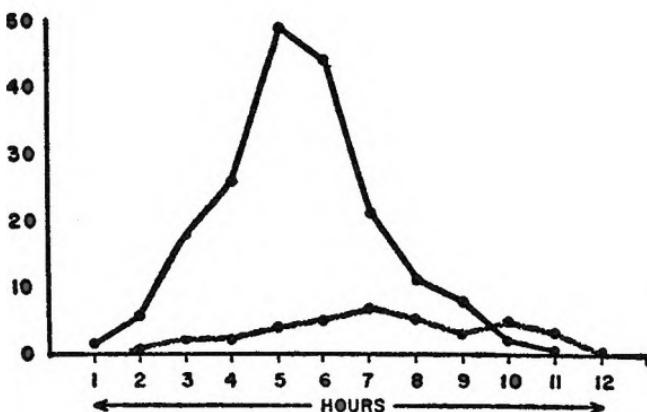
FIGURE 6**HALLUCINATIONS: NONE:0, MILD:1, DISTURBING 2**

lucination) or his awareness of the illusory quality of his vision (visual distortion). At the height of the LSD reaction less than 10 percent had actual hallucinations, while about 55 percent (75 patients) confessed to visual distortions. (Figure 6.)

6. *Fear and panic reaction.* This subtle and meaningful parameter of observation was carefully studied. It was classified as: none (0), mild uneasiness and free-floating fear (1), and panic (2). Again a cumulative index was constructed with these two coded events seen on the upper [curve] (Figure 7) and the numerical panic reactions seen on the lower [curve]. Seven patients had panic, while 42 suffered mild anxiety reactions. None of the reactions were of sufficiently severe character to terminate the LSD reaction. All were amenable to psychotherapy. This consisted of urging the patient not to fight the panic, not to attempt to maintain the control of his "reason," but to engage in the experience and to surrender to whatever the LSD reaction might bring. The panic occasionally seen in the psychedelic experience is probably not related to the frightful or threatening images or fantasies, but to the

FIGURE 7

SEEN IN PATIENTS AFTER LSD ADMINISTERED: 0 - NONE
1 - UNEASINESS 2 - PANIC



reluctance of the individual to surrender his aggressive goal direction. Such a loss of future aims, depriving aggression of its most powerful impetus, produces an enforced passivity, which has been demonstrated to produce fear and panic (8). Goal direction is made difficult by the lessening of the ability to anticipate. If that is diminished, the drive for future aims is jeopardized, and the surrender to immediacy, to the moment, made mandatory. It is just this surrender to the immediate sensory input, without further elaboration and attenuation by considerations of the future or past, which frightens patients. The logical therapeutic response to such fear of surrender is the demonstration of the fact that such a surrender is not dangerous, but can be quite pleasurable. Any attempt to maintain the patient's defenses against submission will increase his fear and panic. He is, to a certain extent, artificially deprived of control of the impact of his sensory life and fantasies and has difficulties contending with such a flood of impressions. The fear, probably not originating in this sensory input, comes from his attempt to control it with obviously inadequate means.

Statements about the transience of the experience or about the fact that it is only a "drug reaction" should be avoided; and suggestions which emphasize the reality of the

situation seem contraindicated. They attempt to re-enforce the defenses of the patient, and implicitly accentuate the danger to the patient, should he lose them. Such emphasis on "reality" may serve as reassurance to the therapist, but does little to alleviate the patient's fear. A courageous and fearless encouragement to engage in the experience and to surrender to it relieves the patient's apprehension and may avert panic. We feel that this is the only way to combat this rather disturbing side reaction.

It is noteworthy that not one patient, though they were critically ill, had any adverse medical reaction, and the administration of LSD was well tolerated.

Other Studies

In addition to the work exploring LSD as an analgesic, two pilot studies were made. The first concerns the use of LSD as a preanesthetic agent. This was a natural development, because one of the most striking features of the LSD reaction is the loss of aggressive feelings, the acceptance of passivity, and the consequent ease in surrendering control, which is required for easy anesthetic induction. The same case against the value of anticipation in a preoperative situation may be made as can be made against the value of anticipation of death. And in consequence, the same arguments can be made for the use of LSD as preoperative medication. This loss of aggressive feelings and willingness to surrender may be one of the prime causes of fear and panic reaction associated with the induction phase of anesthesia, fainting, hypnosis, or even in normal sleep induction. This is especially true in individuals who rely on strong conscious control for regulation of their behavior. Other customary premedications (meperidine, morphine, or scopolamine) are used for their soporific dulling action. LSD does not dull the sensorium, but mediates passive acceptance of even threatening events. The desirability of avoiding postoperative analgesia was a second reason for considering LSD as preanesthetic agent.

So far we have a series of ten cases, demonstrating the safety of the procedure and its potential therapeutic use. The ten patients were all females in good health except for fibro-adenomata, who underwent total abdominal hysterectomies.

FIGURE 8

Summary of a Pilot Study of LSD as premedication for General Anesthesia

Anesthetic used	Pre-Anesthetic anxiety	Ease of Induction	Operative Blood Loss	Emergence from Anesthesia	Analgesic Requirements
1. cyclo.	2	0	normal	easy	36 hours
2. cyclo.	1	0	normal	very easy	none
3. cyclo.	2	0	normal	easy	Patient was asthmatic and developed bronchospasms, but was not operated on.
4. cyclo.	0	0	normal	very easy	42 hours
5. fluorothane	1	0	normal	very easy	none
6. fluoro+hane	2	1	normal	easy	none
7. fluoro+hane	0	0	normal	very easy	48 hours
8. cyclo.	2	1	normal	easy	12 hours
9. cyclo.	0	0	normal	very easy	none
10. cyclo.	0	0	normal	very easy	none

Resumption of bodily functions and ambulation; all were normal or early, except number 3; for explanation see above.

Legend: 0-4 indicates a graduation from "no difficulty" to "very difficult" or "severe".

Normal refers to customary accepted amounts.

"Analgesic requirements" refers to the time elapsed from emergence from anesthesia to the first administration of an analgesic.

One hundred mcm. LSD was given two hours before surgery as the only premedication except atropine. Results can be seen on Figure 8. All patients tolerated the procedure well. Some laughed while the mask was applied and, still laughing, fell asleep. After recovery the patients were asked if they would want LSD again, should further surgery be necessary; no reluctance was expressed.

The second pilot study concerned the effect of LSD on four patients with phantom limb pain. There had been a report in the Japanese literature (9) claiming good results with LSD in the treatment of this condition, and it seemed plausible to us, but our results were negative. No lasting pain relief was noted. Even during the acute LSD reaction we did not note any significant results.

One sidelight might be meaningful. One patient, an amputee above the knee, stated that under LSD he noted an approximation of the pain to the stump. The pain had been in the non-existing heel, and gradually moved up to about two inches below the stump.

Summary and Conclusions

This phenomenon lends itself to further investigation. It is evident that the three incidences of attenuation of anticipation produced by the psychedelic experience reported here are only examples of a much wider area of potential application of the LSD reaction in the therapeutic field. This report may serve as stimulus to explore the therapeutic value of a diminishing of anticipation in other areas.

REFERENCES

1. Kubie, L. S. *Integrating Approaches to Mental Disease*, ed. H. D. Kruse. Hoeber-Harper, 1957.
2. Kubie, L. S. "Instincts and Homeostasis." *Psychosomatic Medicine*, 1948, 10:15-30.
3. Cutner, M. "Analytic Work with LSD-25." *Psychiatric Quarterly*, 1959, 33:715.
4. Beecher, H. K. "The Measurement of Pain," *Pharmacologic Review*, 1957, 9:59.
5. Kast, E. C. "The Measurement of Pain, a New Approach to an Old Problem," *Journal of New Drugs*, 1962, 2:344.
6. Shenger-Krestovnikova, N. R. "Questions on the Differentiation of Visual Stimuli and the Limits of Differentiation of Visual Analyzer of the Dog." *News of the Lesgaft Institute of the Petrograd Scientific Institute*, 1921, Vol. 3.

7. Pavlov, I. *Lectures on Conditioned Reflexes*. International Publishers Inc., 1928.
8. Sabshin, M., and Ramot, J. *Archives for Neurology and Psychiatry*, 1956, 75:367.
9. Kuromaru, S., et al., "The Effect of LSD on the Phantom Limb; the Problem of Body Scheme and the Therapeutic Use of LSD-25." *Psychiatr. and Neurol. Jap.*, 1962.

15. LSD AND PSYCHOTHERAPY: A BIBLIOGRAPHY OF THE ENGLISH-LANGUAGE LITERATURE

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The first account of the use of LSD as an aid in psychotherapy was published by a pair of American investigators, Busch and Johnson, in 1950. Since that time, claims of clinical usefulness have appeared periodically, and from many countries besides the United States—from England and Canada, widely from South America, from Israel, from Germany, France, Italy, Holland and Czechoslovakia. The bibliography that follows lists only English-language publications; readers interested in the foreign-language literature may consult the exhaustive *LSD: Annotated Bibliography* available from Sandoz Pharmaceuticals, Hanover, N.J.

BIBLIOGRAPHY

Abramson, H. A. "Lysergic Acid Diethylamide (LSD-25). III.

As an adjunct to psychotherapy with elimination of fear of homosexuality." *J. Psychol.*, 1955, 39:127-155.

Abramson, H. A. "Lysergic Acid Diethylamide (LSD-25). XIX.

As an adjunct to brief psychotherapy, with special reference to ego enhancement." *J. Psychol.*, 1956, 41:199-229.

Abramson, H. A. "Lysergic Acid Diethylamide (LSD-25). XXII. Effect on transference." *J. Psychol.*, 1956, **42**:51-98.

Abramson, H. A., ed. *The Use of LSD in Psychotherapy*. New York: Josiah Macy, Jr., Foundation, 1960.

Abramson, H. A. "Lysergic Acid Diethylamide (LSD-25). XXXII. Resolution of counter-identification conflict of father during Oedipal phase of son." *J. Psychol.*, 1961, **51**:33-87.

Anderson, E. W. M., and Rawnsley, K. "Clinical Studies of Lysergic Acid Diethylamide." *Manchester Psychiat.*, 1954, **128**:38-55.

Arendsen-Hein, G. W. "Treatment of the Neurotic Patient, Resistant to the Usual Techniques of Psychotherapy, with Special Reference to LSD." *Topic. Probl. Psychother.*, 1963, **4**:50-57.

Ball, J. R., and Armstrong, J. J. "The Use of LSD in the Treatment of the Sexual Perversions." *Canad. Psychiat. Ass. J.*, 1961, **6**:231-235.

Belden, E., and Hitchen, R. "The Identification and Treatment of an Early Deprivation Syndrome in Alcoholics by Means of LSD-25." *Amer. J. Psychiat.*, 1963, **119**:985-986.

Bierer, J., and Browne, I. W. "An Experiment with a Psychiatric Night Hospital." *Proc. Roy. Soc. Med.*, 1960, **53**:930-932.

Busch, A. K., and Johnson, W. C. "LSD-25 as an Aid in Psychotherapy (preliminary report of a new drug)." *Dis. Nerv. Syst.*, 1950, **11**:241-243.

Butterworth, A. T. "Some Aspects of an Office Practice Utilizing LSD-25." *Psychiat. Quart.*, 1962, **36**:734-753.

Chandler, A. L., and Hartman, M. A. "LSD-25 as a Facilitating Agent in Psychotherapy." *AMA Arch. Gen. Psychiat.*, 1960, **2**:286-299.

Holden, L., ed. *Proceedings of the Round Table on Lysergic Acid Diethylamide and Mescaline in Experimental Psychiatry*. New York: Grune & Stratton, 1956.

Chwelos, N., Blewett, D. B., Smith, C. M., and Hoffer, A. "Use of LSD-25 in the Treatment of Chronic Alcoholism." *Quart. J. Stud. Alcohol*, 1959, **20**:577-590.

Cohen, S. "The therapeutic potential of LSD-25." In R. M. Featherstone & A. Simon, eds., *A Pharmacologic Approach to the Study of the Mind*. Springfield, Ill.: Thomas, 1959.

Cohen, S. "LSD: Side Effects and Complications." *J. Nerv. Ment. Dis.*, 1960, **130**:30-40.

Cohen, S., and Ditman, K. S. "Complications Associated with Lysergic Acid Diethylamide (LSD-25)." *J. Am. Med. Assoc.*, 1962, **181**:161-162.

Cohen, S., and Ditman, K. S. "Prolonged Adverse Reactions to Lysergic Acid Diethylamide." *Arch. Gen. Psychiat.*, 1963, **8**:475-480.

Cole, J. O., and Katz, M. M. "The Psychotomimetic Drugs, an Overview." *J. Am. Med. Assoc.*, 1964, **187**:758-765.

Crocket, R., Sandison, R., and Walk, A., eds. *Hallucinogenic Drugs and Their Psychotherapeutic Use*. Springfield, Ill.: Thomas, 1963.

Cutner, Margot. "Analytic Work with LSD-25." *Psychiat. Quart.* 1959, **33**:715-757.

Denber, H. C. B., & Rinkel, M., eds. "Round Table: Psychodynamic and Therapeutic Aspects of Mescaline and Lysergic Acid Diethylamide." *J. Nerv. Ment. Dis.*, 1957, **125**:423-451.

Ditman, K. S., Hayman, M., and Whittlesey, J. R. B. "Nature and Frequency of Claims Following LSD." *J. Nerv. Ment. Dis.*, 1962, **134**:346-352.

Eisner, Betty G., and Cohen, S. "Psychotherapy with Lysergic Acid Diethylamide." *J. Nerv. Ment. Dis.*, 1958, **127**:528-539.

Feld, M., Goodman, J. R., and Guido, J. A. "Clinical and Laboratory Observations on LSD-25." *J. Nerv. Ment. Dis.*, 1958, **126**: 176-183.

Fisher, G. "Some Comments Concerning Dosage Levels of Psychedelic Compounds for Psychotherapeutic Experiences." *Psychedelic Rev.*, 1963, **1**:208-218.

Frederking, W. "Intoxicant Drugs (Mescaline and Lysergic Acid Diethylamide) in Psychotherapy." *J. Nerv. Ment. Dis.*, 1955, **121**:262-266.

"Hallucinogenic Drugs." *Lancet*, 1961, **1**:444-445.

Harman, W. W. "The Issue of the Consciousness-Expanding Drugs." *Main Currents in Modern Thought*, 1963, **20**:5-14.

Hollister, L. E., Degan, R. O., and Schultz, S. D. "An Experimental Approach to Facilitation of Psychotherapy by Psychotomimetic Drugs." *J. Ment. Sci.*, 1962, **108**:99-101.

Holzinger, R. "Analytic and Integrative Therapy with the Help of LSD-25." *Psychologia*, 1962, **5**:131-139.

Janiger, O. "The Use of Hallucinogenic Agents in Psychiatry." *The California Clinician*, 1959, **55**:251-259.

Jensen, S. E. "A Treatment Program for Alcoholics in a Mental Hospital." *Quart. J. Stud. Alcohol*, 1962, **23**:243-251.

Leuner, H., and Hoffeld, H. "Psychotherapy under the Influence of Hallucinogens." *The Physician's Panorama*, 1964, **2**:13-16.

Lewis, D. J., and Sloane, R. B. "Therapy with Lysergic Acid Diethylamide." *J. Clin. & Exper. Psychopath.*, 1958, **19**:19-31.

Ling, T. M., and Buckman, J. "The Use of Lysergic Acid in Individual Psychotherapy." *Proc. Roy. Soc. Med.*, 1960, **53**:927-929.

Ling, T. M., and Buckman, J. *Lysergic Acid (LSD-25) and Ritalin in the Treatment of Neurosis*. London: Lambarde Press, 1963.

MacLean, J. R., MacDonald, D. C., Byrne, U. P., and Hubbard, A. M. "The Use of LSD-25 in the Treatment of Alcoholism and Other Psychiatric Problems." *Quart. J. Stud. Alcohol*, 1961, **22**: 34-45.

Martin, A. "LSD (Lysergic Acid Diethylamide) Treatment of Chronic Psychoneurotic Patients under Day-Hospital Conditions." *Internat. J. Soc. Psychiat.*, 1957, **3**:188-195.

O'Reilly, P. O., and Reich, G. "Lysergic Acid and the Alcoholic." *Dis. Nerv. System.*, 1962, **23**:331-334.

Osmond, H. "A Review of the Clinical Effects of Psychotomimetic Agents." *Ann. N.Y. Acad. Sci.*, 1957, **66**:418-434.

Robinson, J., Davies, L., Sack, E., and Morrissey, J. "A Controlled Trial of Abreaction with LSD-25." *Brit. J. Psychiat.*, 1963, **109**: 46-53.

Rolo, A., Krinsky, L. W., and Goldfarb, L. "LSD as an Adjunct to Psychotherapy with Alcoholics." *J. Psychol.*, 1960, **50**:85-104.

Sandison, R. A. "Psychological Aspects of the LSD Treatment of the Neuroses." *J. Ment. Sci.*, 1954, **100**:508-515.

Sandison, R. A., Spencer, A. M., and Whitelaw, J. D. A. "The Therapeutic Value of Lysergic Acid Diethylamide in Mental Illness." *J. Ment. Sci.*, 1954, **100**:491-507.

Sandison, R. A., and Whitelaw, J. D. A. "Further Studies in the Therapeutic Value of Lysergic Acid Diethylamide in Mental Illness." *J. Ment. Sci.*, 1957, **103**:332-343.

Savage, C. "Lysergic Acid Diethylamide (LSD-25). A Clinical-Psychological Study." *Amer. J. Psychiat.*, 1952, **108**:896-900.

Savage, C., Terrill, J., and Jackson, D. D. "LSD, Transcendence, and the New Beginning." *J. Nerv. Ment. Dis.*, 1962, **135**:425-439.

Schoen, S. "LSD in Psychotherapy." *Am. J. Psychother.*, 1964, **18**: 35-51.

Schmiege, G. R. "The Current Status of LSD as a Therapeutic Tool: A Summary of the Clinical Literature." *J. Med. Soc. of N.J.*, 1963, **60**:203-207.

Sherwood, J. N., Stolaroff, M. J., and Harman, W. W. "The Psychedelic Experience—a New Concept in Psychotherapy." *J. Neuropsychiat.*, 1962, **3**:370-375.

Smith, C. M. "A New Adjunct to the Treatment of Alcoholism: The Hallucinogenic Drugs." *Quart. J. Stud. Alcohol*, 1958, **19**:406-417.

Smith, C. M. "Some Reflections on the Possible Therapeutic Effects of the Hallucinogens." *Quart. J. Stud. Alcohol*, 1959, **20**:292-301.

Tenenbaum, B. "Group Therapy with LSD-25." *Dis. Nerv. Syst.*, 1961, **22**:459-462.

Unger, S. "Mescaline, LSD, Psilocybin, and Personality Change: A Review." *Psychiatry*, 1963, **26**:111-125.

Ward, J. L. "The Psychodrama of the LSD Experience: Some Comments on the Biological Man." *Group Psychother.*, 1961, **14**:121-128.

NOTES

1. *Summary of claimed therapeutic effects.* Reported therapeutic effects have recently been summarized by Schmiege (1963) as follows:

Those using LSD in multiple doses as an adjunct to psychotherapy feel that it is so useful because of its ability to do the following: 1) It helps the patient to remember and abreact both recent and childhood traumatic experiences. 2) It increases the transference reaction while enabling the patient to discuss it more easily. 3) It activates the patient's unconscious so as to bring forth fantasies and emotional phenomena which may be handled by the therapist as dreams. 4) It intensifies the patient's affectivity so that excessive intellectualization is less likely to occur. 5) It allows the patient to better see his customary defenses and sometimes allows him to alter them. Because of these effects, therapists feel that psychotherapy progresses at a faster rate. . . . Those who administer lysergic acid in a single dose have as their goal, in the words of Sherwood, et al., (1962), an overwhelming reaction "in which an individual comes to experience himself in a totally new way. . . ." Frequently, this is accompanied by a transcendental feeling of being united with the world. . . . Some spectacular, and almost unbelievable, results have been achieved by using one dose of the drug.

Exemplary descriptions of the use of LSD as an aid, adjunct, adjuvant or facilitating agent in traditionally conceived therapy are contained in Sandison and coworkers (1954), Abramson (1955), Eisner and Cohen (1958), and Chandler and Hartman (1960). Exemplary accounts of the recently formulated "new concept" procedure—that is, with psychotherapy considered as preparation for a single, high-dosage, psychedelic

session—are contained in Chwelos and coworkers (1959), MacLean and coworkers (1961), and Sherwood and coworkers (1962).

2. *Safety.* The issue of the safety (or danger) of LSD is quite complex. Leaving subtle questions aside—that is, speaking only medically—LSD appears quite safe. Two recent reviews concluded as follows:

LSD (or one of the other chemicals of this class) represents a potent and versatile tool requiring responsible handling and effective controls (as with electricity or automobiles). There are real hazards involved with casual or uninformed or maledirected usage of the psychedelic drugs. But any agent with the power to produce benefits has also the power to do harm. Safety is not a basic issue but often is a camouflage for issues less easy or less comfortable to examine. (Harman, 1963)

. . . warranted concern over the illicit abuse of these agents should not prevent the systematic study of their possible potential in the treatment of otherwise severely treatment-resistant psychiatric conditions. (Cole and Katz, 1964)

The incidence and occurrence of side effects and prolonged adverse reactions have been dealt with in the series of papers by Cohen (1960), Cohen and Ditman (1962), and Cohen and Ditman (1963). Their conclusion (1963): "When properly employed, LSD is a relatively safe and important research tool." However, when *improperly* employed—that is, irresponsibly, unskillfully or self-administered—the occurrence of LSD casualties is considered inevitable (opinion of the present author). It should be absolutely understood that safe and effective work with LSD (or other psychedelic agents) presupposes specialized training and experience.

3. *Miscellany.* There does exist a fair-sized clinical literature on psychedelic agents other than LSD. For early work with mescaline and the "Weir-Mitchell treatment," see: Ross, T. A. *The Common Neuroses* (2nd ed.). London: Arnold, 1937. Mostly paralleling the uses of LSD, there has been considerable recent work with psilocybin. (See *Psilocybin: Annotated Bibliography*. Sandoz Pharmaceuticals, Hanover, N. J.) Of special interest in the psilocybin literature, in view of the patient category (recidivist convicts) is an unpublished

paper: Leary, T., Metzner, R., Presnell, M., Weil, G., Schwitzgebel, R., and Kinne, S., "A Change Program for Adult Offenders Using Psilocybin." Harvard University, 1962, Mimeographed. For a number of other incidental items, not included in the bibliography, see: Bender, Lauretta, Goldschmidt, L., & Siva Sankar, D. V., "Treatment of Autistic Schizophrenic Children with LSD-25 and UML-491." *Recent Advances Biol. Psychiat.* 1962, 4:170-177 (which follows a chemo- rather than a psychotherapeutic model). And Kast, E. "The Analgesic Action of Lysergic Acid Compared with Di-hydromorphinone and Meperidine." *Bull. Drug Addiction and Narcotics*, 1963, Appendix 27, 3517-3529 (which recounts work with terminal cancer patients).

4. *Current legal situation.* Following the Thalidomide tragedy, Congress passed restrictive legislation governing the testing and research use in man of experimental or nonintroduced drugs. Since the implementation of these regulations on June 7, 1963, the authorized distribution of psychedelic agents has been stringently controlled. They are legally available only to investigators functioning within federal or state agencies who have the formal approval of the agency, or to investigators carrying out research under grants from federal or state agencies. The intent has been to insure against misuse of these potent substances or unsafe research—which might be undertaken by well-meaning but unqualified investigators—by surrounding them with an adequate system of checks and balances. Cole and Katz (1964) have made a more detailed statement:

Psychotomimetic agents are legally and scientifically "investigational" drugs and can only be studied by experienced investigators under carefully controlled conditions. . . . None of these agents can legally be used, even on an investigational basis, except by investigators who have filed a formal research plan with the Food and Drug Administration through a sponsoring pharmaceutical company or by investigators who have themselves taken on both the role of sponsor and of investigator and have gone through the appropriate steps for providing the necessary information concerning the safety of the agents and their proposed research use in man with the Food and Drug Administration.

5. *Current status.* Not a single, methodologically acceptable controlled study of the efficacy of LSD-assisted psychotherapy has yet been performed. The many *claims* of dramatic thera-

peutic changes in such highly treatment-resistant conditions as chronic alcoholism, severe chronic neurosis, and severe personality disorder must thus be regarded as *not proven* (for further discussion, see Cole and Katz, 1964). (In all fairness, it may be pointed out that methodologically acceptable controlled studies of *other* psychotherapies, including psychoanalysis, hardly abound in the literature.)

One controlled study is presently in progress. Financed by a grant from the National Institute of Mental Health and proceeding under the auspices of the Department of Medical Research, Spring Grove State Hospital, Baltimore, Md. (Dr. Albert Kurland, Director), it is designed to assess both the short-term and possibly enduring therapeutic consequences in chronic, hospitalized alcoholics of "psychedelic therapy"—that is, two weeks of intensive psychotherapeutic preparation for one single, high-dosage, continuously monitored LSD session (averaging ten hours in duration).

The only other installation in the United States at which systematic clinical research has been pursued in recent years is the International Foundation for Advanced Study, Menlo Park, California (Dr. Charles Savage, Medical Director). For unpublished accounts of this work, see: Savage, C., Hughes, Mary A., and Mogar, R., "The Effectiveness of Psychedelic (LSD) Therapy—A Preliminary Report" (in press, *Int. J. Soc. Psychiat.*) and Mogar, R., Fadiman, J., and Savage, C., "Personality Change Associated with Psychedelic (LSD) Therapy" (mimeographed, 1964).

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